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Motor Wheel

Wood Wheels for Demountable Rims

Wood Wheels Demountable at Hubs

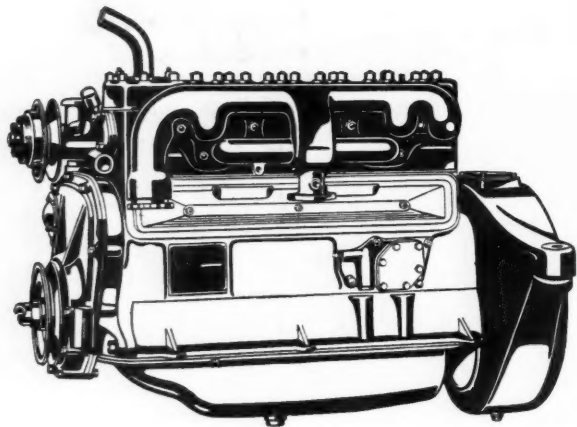


PERMANENCE, silence, beauty and accuracy have been built into the Motor Wheel demountable wood wheel. Entirely interchangeable with Motor Wheel *steel* and *wire*, it affords the easiest means to widest option on the sales floor. (The Motor Wheel interchangeable line, Motor Wheel wood wheels for demountable rims, Disteel wheels, and Tuarc wheels, make it possible for every car, model and buyer to have Motor Wheel excellence.

MOTOR WHEEL CORPORATION
LANSING, MICHIGAN



Cleanliness is an important feature in building Real Seal Continental motors. Illustrated above is a rotary sand blast machine used to remove scale from small parts.



Three Decades of Development

For nearly three decades the development of Red Seal Continental Motors has been going steadily forward.

The experience gained during this period has placed Continental in the unquestioned position of leader in gasoline motor design and production.

Today this experience is being used to the utmost in still further developing the quality and performance of all Red Seal Continental motors for passenger car, bus, truck, marine, airplane and industrial uses.



CONTINENTAL MOTORS CORPORATION

Offices: Detroit, Mich., U. S. A.

Factories: Detroit and Muskegon

The Largest Exclusive Motor Manufacturer in the World

Continental Motors

Europe is Turning to U.S. for Automotive Parts

Such major items as engines now purchased in this country by foreign manufacturers. Movement is tantamount to admission that American quality is highest.

By Norman G. Shidle

FOREIGN automobile manufacturers in days gone by have been known to belittle the quality and performance possibilities of American parts and American design. Our production methods long have had their admiration, although the tendency has been strong sometimes to try to link up quantity output with skimping of quality.

But the picture is changing rapidly. Instead of underestimating the values of American parts, many European makers suddenly are making a *volte face* and are planning to use those very American parts in their own vehicles—which means that those foreign makers at least must become boosters rather than detractors of the quality of American unit parts.

Then, too, there are still other European car builders who, although they aren't buying American parts, are doing their best to incorporate in their own models as many phases of American design as they can. And practically all progressive foreign manufacturers today are getting themselves better oriented than ever before as to the assistance and values to be procured from closer contact with American machine

tool builders and from wider utilization of American-built and designed machinery.

All this is entirely aside from the general study of American production methods which has been made by European makers over a period of five or 10 years. The purchase of parts direct from American factories, obvious attempts to imitate many features of current American design and the more strenuous attempts to benefit from the technical progress of the American machine tool industry all are of more recent origin—at least so far as any degree of intensity is concerned.

And thereby hangs a tale.

Just what that tale will turn out to be, nobody can predict right now, but it is interesting to speculate about it, just as it is interesting to try to figure the outcome of one of the continued-in-our-next serials which are so popular in fiction periodicals.

The current movement on the part of European manufacturers toward buying unit parts from American parts manufacturers probably is the most striking of the trends mentioned. Numerous instances recently have come to light.

Donnet Co., a French firm recently originated from the Zedel and Vinot & Deguingand companies, is

The FORD Announcement

Complete Illustrations and Final Details in This Issue

The substance of Ford's official announcement of the new Model A, together with final details as to mechanical construction and body styles and complete illustrations of the principal parts, will be found beginning on page 839. This material supplements and corroborates the article published on these pages last week.



Henry Ford stamping the official "No. 1" on the block of the first Model A engine.

using a Continental motor in its new car announced at the Paris show this year. Donnet has a new factory with a capacity of 100 vehicles per day. Sizaire-Berwick, another French firm, is using a Lycoming powerplant, while another French car, Sizaire-Freres, is to be powered with a Willys-Knight engine. Within the last few months, also, important executives of the powerful Skoda works of Czechoslovakia have been in this country negotiating with American parts makers, chiefly for units other than engines. The Skoda works builds a Skoda car, and has also manufacturing rights for the Hispano-Suiza, its total automobile output running in the neighborhood of 5000 vehicles per year. Other European makers as well have been and are investigating the possibilities of buying unit parts in this country.

In a slightly different category, although to be visioned perhaps as a part of the same general line of thinking among foreign makers, is the recent announcement that Lancia Automobile Co., the well-known Italian producer, has incorporated an American company and is to manufacture a Lancia over here, the car to have an Italian-built engine, but to utilize American units for most other parts. The plans involve the erection of an assembly plant with a capacity of 20 cars per day. Then, too, there is the arrangement made a month or so ago by which J. S. Rasmussen, owner of the Zschopauer Motor Works, Germany, purchased from the receiver the right to manufacture Rickenbacker engines in all countries of the world except the United States and Canada. He also acquired all tools, jigs, fixtures, dies and drawings of the complete car.

Further Developments Likely

All of these moves of recent months are illustrative of a proclivity which is emphasized by existing negotiations which are not yet completed; as well as by the announced activities of European makers along this line. That further developments are likely in the natural course of events is indicated by the statement made informally to us the other day by the executive of a large Central European car company who had been visiting parts makers in this country for several weeks. "Wages in our country," he said, "are about one-fourth what they are in the United States. Nevertheless we find that, with our car output of a little over 4000 a year, we can buy many unit parts from American makers, pay a 30 to 50 per cent tariff, together with all transportation charges, and still get those parts into our car at a cost considerably less than if we build them ourselves."

Assuming, for the moment, the possibility of this trend having a gradual growth during the next 10 years, it is interesting to try to vision its possible effect on future automotive export sales.

Foreign manufacturers are interested in buying parts from this country, naturally, so that they may be able to produce at lower cost a vehicle of a given quality. At the present time the American manufacturer is bound to have a distinct direct advantage because the foreign maker, even though he can reduce his own costs, cannot put a given part into his vehicle nearly as cheaply as the American maker could use the same part due to the necessary addition of transportation and tariff charges. It is reasonable to suppose, however, that this latter hurdle may not be as great in the future if powerful automotive interests within European countries get to using or desiring to use large quantities of imported automotive parts. It is perfectly

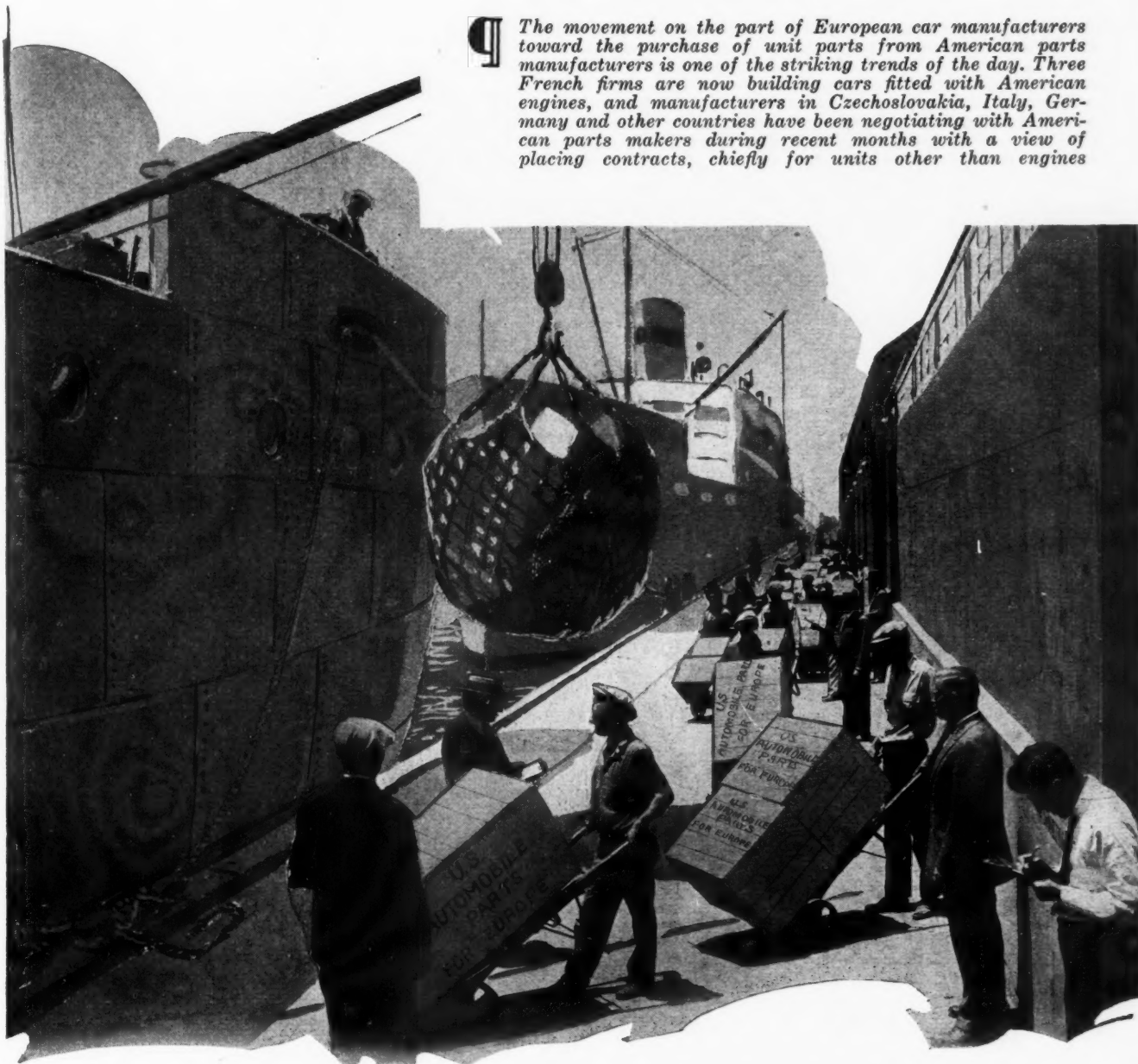
conceivable that the tariffs in some countries might be kept up on cars but reduced on parts if such a condition should develop in future years. Thus the differential would be reduced, but not eliminated.

It would appear that, by using parts from American parts makers, a European manufacturer will be putting himself in a more advantageous position to compete with American cars, particularly in his own country. Consequently, the trend indicated might be interpreted as simply adding to the difficulties already facing our producers in selling cars in European markets where a domestic automobile manufacturing industry exists. Some American car makers, as a matter of fact, have recognized that these difficulties have been increasing for some time and have not hesitated to admit privately that they look for the real and permanent expansion of their overseas business in those countries—comprising most of the world to be sure—where domestic automobile manufacturing is not practiced. In any case, it seems quite likely that any added competition which may come to car makers through this trend will be more than compensated for, so far as the United States industry as a whole is concerned, by the added revenue accruing to our parts makers. Whatever advantages may come to parts makers in this way, helping them to greater stability and permitting them greater funds for development work, will reflect eventually to the benefit of the car makers themselves. Particularly is this true in this time of the new competition of industry with industry, when the prosperity of every individual part of the automotive industry is essential to the welfare of the whole.

The increased intensity with which European makers have been imitating American designs and copying American production methods also bodes greater competition for our car makers in foreign markets. At first glance it would seem that this development can



The movement on the part of European car manufacturers toward the purchase of unit parts from American parts manufacturers is one of the striking trends of the day. Three French firms are now building cars fitted with American engines, and manufacturers in Czechoslovakia, Italy, Germany and other countries have been negotiating with American parts makers during recent months with a view of placing contracts, chiefly for units other than engines



but make the going harder in the future than in the past. Deeper analysis, however, shows a more constructive picture—a picture which has been seen and emphasized by prominent American executives many times in the past. This view is really just an international application of the new competition idea. It is that the real sales job of automobile manufacturers in the world market today and for many years to come is the job of selling automotive transportation; of selling the automobile as a possible and desirable individual transportation medium for the masses.

From this point of view the progress of European manufacturers toward greater efficiency and greater sales activity is to be fostered rather than discouraged. The development of foreign production activities such as those exemplified particularly by Morris in England and Citroen in France seem likely, in the long run, to work to the benefit of all automotive manufacturers. That progress really is being made abroad in some instances is indicated by a recent reply made by Andre Citroen to Charles Faroux's statement that the Ameri-

can worker, in a given time, produces five to six times more than the European worker; that the American worker pays for a Chevrolet with the earnings of one hundred days' labor, while the Frenchman has to give five hundred days' labor to secure a Citroen. Mr. Citroen claims that these figures do not apply to the leading and best equipped European plants. In support of his contention he says:

"My chassis assembly line began to operate in 1924, or one year after my first visit to the United States; then the steel pressings department was installed and the last of the shops was put into operation in October of this year. In a few months we were able to obtain results which can be compared with those of the United States, despite America's 17 years' experience, her 22,000,000 automobiles, compared with our million, and her output of 15,000 cars a day, compared with our 500 or 600.

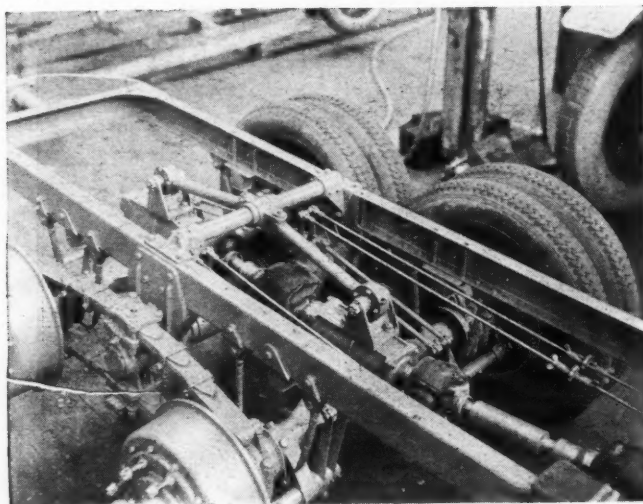
"At our cast iron foundry the output per worker is 330 lb. per day, compared with 370 lb. per day pro-

(Continued on page 838)

Many New *Six-Wheel* Models at London Truck Show

Six-cylinder engines also increase in number and higher speed is built into light jobs. Pneumatic tires are used in most cases. Two sleeve-valve engines.

By M. W. Bourdon



View of the "bogey" of the Vulcan rigid frame six-wheeler, which complies with military requirements, showing how the dual springs are supported by a central trunnion, and how driving torque is resisted by links between the worm casings and a transverse tubular member

THE predominant feature of the truck show at Olympia, London, which is open at the time of writing, is the large number of new six-wheelers for both goods and passenger services. There are 16 makes in all, of which 13 are British, and the latter are offered in nearly 30 different models.

In addition to the gasoline-engined examples there are four steamer-trucks with six wheels. In all cases, it should be added, what are known in England as "rigid" six-wheelers are referred to, for besides the foregoing there are numerous six-wheeled "semi-trailers," viz., tractor and two-wheeled trailer combinations.

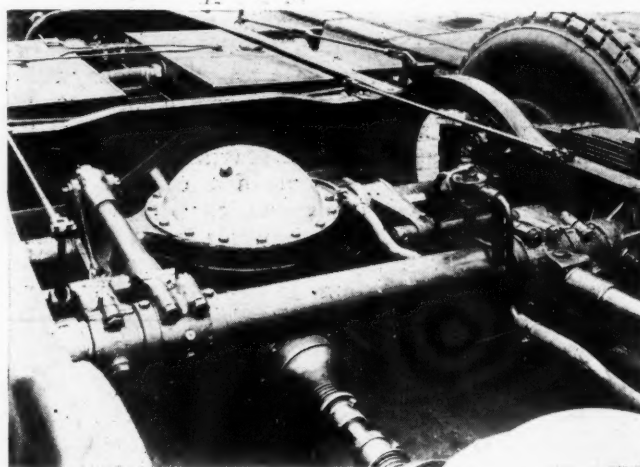
The great majority of these rigid six-wheelers are new models and are produced in all except two or three cases by manufacturers who had nothing of this type to offer, and often questioned their practicability and claimed advantages so recently as at the last London truck show, in 1925. In load capacity they range from the Crossley for 3500 lb. of goods and the Commer for 26-seated buses to the Leyland 22,400 lb. load capacity truck and the Guy and Karrier 72-seated double-deck buses.

Some of the smaller sizes and those for goods-carrying up to 11,000 lb. qualify for the subsidy scheme of the War Department, the specification of which was outlined in *Automotive Industries* of June 11 last. All British examples actually on the market have four-wheel drive, except the Leyland just mentioned and a British F.W.D. which drives through the front wheels as well; but the Laffly and Berliet, French productions, drive through one pair of rear wheels only like the Leyland.

Thirteen of the British models have the driver located alongside the engine, and seven have eight speeds, gained by the provision of an auxiliary gearset that enables four low-speed ratios to be available for cross-country work, as required by the War Department and by commercial users in undeveloped areas overseas.

A point of note concerning the six-wheeled chassis is that, with but one or two exceptions, only the chassis designed for the War Department subsidy or for cross-country work have provision permitting free lateral tilting of the rear axles relative to one another. The chassis for passenger services depend upon the twisting of the springs to permit the departure from inter-axle alignment necessitated by uneven road surfaces.

Next of note in the show as a whole are the use of six-cylinder engines by many additional British makers of trucks and buses, and the great increase in the speed



Foremost rear axle of new Karrier six-wheeler, showing how the axles pass through the "spectacle" type side rails of the frame

capabilities of numerous British buses and light trucks, all of these speed models having a low frame height in relation to previously current practice. At the 1925 truck show only two British makers offered six-cylinder models, viz., Halley and Guy; at Olympia there are now 12. These six-cylinder models are, however, mainly intended for passenger services; their appeal for goods-carrying is likely to be small, and purely incidental from the makers' standpoint. Only one British maker (Guy) has produced a six essentially for trucks, other new and existing high-speed models of the latter type all having four-cylinder engines.

The increase in the speed capabilities of passenger chassis is little short of remarkable, especially when one considers that the legal limit of most of these is still 12 m.p.h., and 20 m.p.h. in the smallest examples; despite that, and notwithstanding that the proposed increase of legal maximum speed will be 20 m.p.h. for 20-seaters and the larger sizes, some of the new models are capable of 50-60 m.p.h. These speed models are, of course, intended solely for touring coaches and inter-city bus services; the buses for local services are designed for a maximum of 25-30 m.p.h. with pneumatic tires.

The adoption of pneumatic tires as standard equipment represents a development since the last show in the case of all passenger chassis and in that of trucks for loads above 3000 lb. It has resulted in considerable weight reduction on the previous standards, and is, of course, a factor entering into the increase of speeds.



Interior of Dennis parlor coach. Seats are of the armchair type with a hinged table in front of each passenger

Here it may be said that the giant pneumatic is exceptional; practically all four-wheeled models of a load capacity of more than 4500 lb. have twin tires at the rear and singles of the same size in front.

The new engines, especially but not only the sixes, exhibit the characteristics of private passenger car engines to a marked extent; some are frankly private car engines modified perhaps in having stiffer crankcases and larger bearing areas. In crankshaft speeds, compression ratio, volumetric efficiency and other respects the majority are equal to high-grade productions found in the lighter service. Compression ratios are frequently well over 5 to 1; in a new Maudsley Six the ratio is 5.8 to 1, though this is exceptional and is permitted largely on account of the combustion chamber shape, viz., a true hemisphere with tulip pattern overhead valves at 90 deg. Crankshaft speeds up to 3000 r.p.m. are within the normal range in many cases.

Overhead valves are not widely in evidence; the same trend is observable as in British private cars, viz., the widespread adoption of a modified Ricardo type com-

bustion chamber with side valves. Again, as in car practice, only Bean among truck and bus makers has adopted the entire Ricardo conception in combustion chamber shape and the use of masked inlet valves. Bean, in fact, is one of the makers using a private car engine in a truck (a four-cylinder 3500 lb. model) and



Reduction in overall height gained by new Leyland bus having offset rear axle gear casing and top gangway located in a well at side of seats

though a new six is designed for public passenger services it follows closely along the lines of the four.

Two new models have sleeve valves; one is an A.D.C. 35-40 passenger bus chassis, in which a six-cylinder Daimler-Knight steel sleeve engine is used, with a bore and stroke of $3 \frac{3}{16} \times 4 \frac{1}{2}$ in. The other is a six-wheel Karrier, which has a Burt-McCollum single sleeve engine designed by Ricardo for passenger service with 66-72 seated double-deck bus bodies.

There is wide divergence between the laden frame heights of the bus and truck chassis that are claimed to afford a "low loading level," to use the British term. The lowest of all at Olympia is a new Saurer (Swiss) chassis (a six-cylinder for 40-passenger bodies), of which the frame behind the driving seat is only $16 \frac{1}{2}$ in. above ground level apart from a sweep over the rear axle; the final drive, it may be added, is by double-reduction, viz., bevels in the axle and helical internal gears on the rear wheels. From that minimum, frame heights range through the $18 \frac{3}{4}$ in. of the A.D.C. London bus to 30 in. or so; in fact, one or two makers claim the "low loading" feature with frames more than 30 in. above the ground. The average height is 24-26 in.

Internal four-wheel brakes are standard on all the high-speed bus and coach chassis and on many of the corresponding trucks. On models intended for not more than 16 passengers or 3000 lb. of goods, brake actuation is by direct pedal pressure; but in larger sizes a servo is almost invariably fitted, a mechanical type in two or three instances, but a vacuum in the majority. Compressed air operation is also found, but is exceptional.

Weight reduction in new models has been effected in most cases without departing from orthodox practice, apart from the use of aluminium castings for the crankcase, gearset casing and front end cover.

There is nothing unorthodox in the new models of truck chassis for loads up to 4500 lb., apart from the six-wheelers already mentioned and beyond the fact that road speeds have been increased in comparison with 1925 standards owing to the adoption of pneumatic tires.

Throughout the range of British trucks the provision of electric lighting is almost general, while on all except the heaviest goods vehicles—solid-tired chassis for loads over 8000 lb.—an electric starter is either standard equipment or is provided for in the engine design. Battery ignition has made its appearance on both trucks and buses, but is mainly confined at present to six-cylinder models. Cam steering is also being used for the first time in a few instances; the same applies to air cleaners and oil rectifiers.

Unit powerplants are found in larger numbers and in larger sizes than hitherto, as in a new range of Leyland chassis where an overhead valve six-cylinder engine of $4\frac{1}{2} \times 5\frac{1}{2}$ in. is used for single and double-deck buses of 32 to 72 seating capacity, the largest being a six-wheeler. Three-point suspensions for engines and powerplants bear clear evidence of more careful consideration, and flexibility at each point is nearly always provided; a rubber-bushed trunnion at the front and the same scheme duplicated at the rear is found in several cases; alternatively, the rear suspension is effected by bearers suspended from or resting upon brackets or cross members through the agency of spring or rubber buffers.

Center Control Increasing

There is no general practice in regard to the number of speeds in chassis for loads up to 4500 lb. or 20 passengers. But for larger sizes, four speeds are found in 95 per cent of chassis, both goods and passenger types. Central control is increasing, and is found in one or two cases even when the driver is located alongside the engine, the gear lever then being attached to the side of the crankcase.

The "forward-driving" position shows considerable increase in favor, and nearly all new models for trucks and buses above the 4500 lb. or 20-passenger size have engines specially designed with all the "accessories" (carburetor, valves, ignition, generator, etc.) on the left, so that the presence of the driver's seat and controls on the right will not have ill-effect in reducing the accessibility of items calling for attention in normal upkeep processes. Further to enhance accessibility and

to enable extensive repairs to be undertaken easily, two makers (Lacre and Pagefield) arrange for the powerplant to be drawn forward clear of the chassis on rollers running within the side rails, after the holding-down bolts have been removed and couplings disconnected; a special trolley is provided to receive the engine as it runs forward out of the frame. In another case (Albion) the driver's cab is designed to lift clear as a unit with the minimum of preliminary work. Only in a few instances is the forward driving position alone offered; in nearly all cases it is an optional feature, but one that is being increasingly favored by users for both trucks and buses.

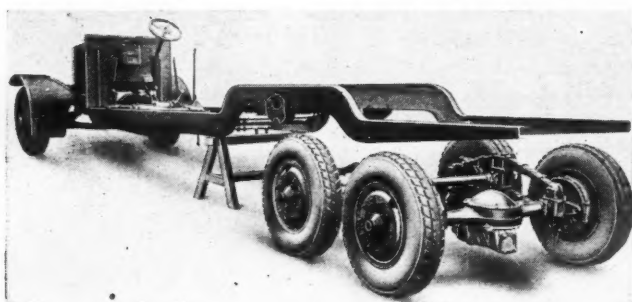
In regard to bodywork, three trends stand out prominently, viz., the increasing number of inclosed top-deck buses for local services, the merging of the touring coach and the saloon bus into one and the same type of vehicle, and the increasingly luxurious character of the bodywork of the latter.

Fabric bodies are to be seen at Olympia, but not to any greater extent than in 1925; but cellulose finish has, naturally, increased.

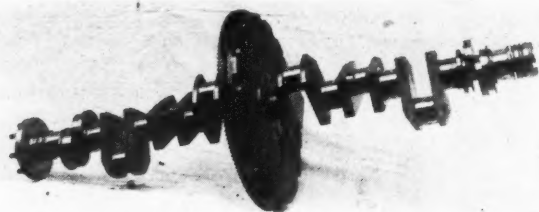
Among the new models of note is the range of Leyland coach and bus chassis already mentioned. It is distinctive in having the six-cylinder engine (415 cu. in.) out of center and the differential casing close along side the underslung rear springs on the left. The front end of the crankshaft is 2 in. from the center line of the chassis and the engine is offset 2 deg. 47 min. in addition to being tilted 4 deg. 30 min. to secure a straight-line transmission to the underneath worm final drive. Offsetting the differential casing enables the floor level of the bus to be reduced 5 in., as it occurs under one of the rear seats.

With a compression ratio of 5 to 1, the engine develops 90 b.h.p. at 2000 r.p.m.

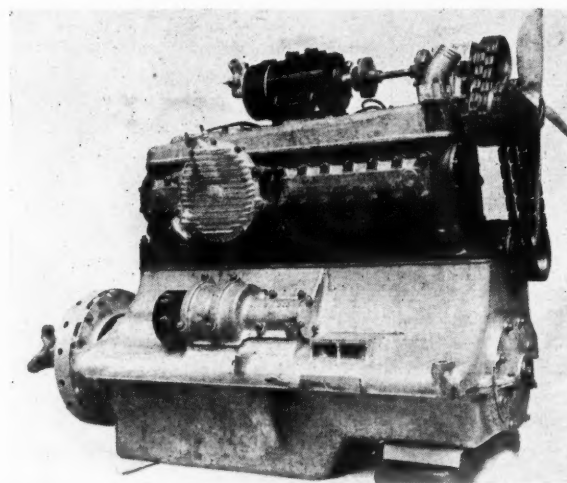
Karriers who, with Guy, were the first British firm to introduce a "rigid" six-wheeled chassis, an outstanding feature of which is the "spectacle" frame sides for the rear axles, has produced a larger model for 72-seated buses with a single sleeve valve engine of 475 cu. in. Designed by Ricardo, as mentioned in the foregoing, it develops 116 b.h.p. at 2200 r.p.m. and 63.4 at 1000 r.p.m., the compression ratio being 5.3 to 1, while the fuel consumption is claimed to be 73.5 ton miles per gallon (long tons and Imperial gallons) with a gross weight of 10 long tons.



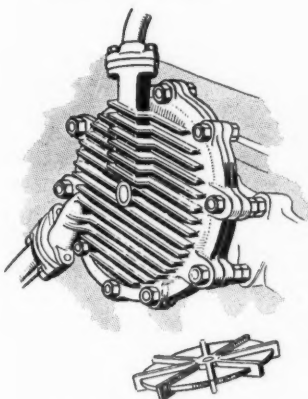
View showing how the rear bogey of the Guy six-wheeler can be withdrawn as a unit



Crankshaft of Karrier single-sleeve-valve six-cylinder engine with central flywheel

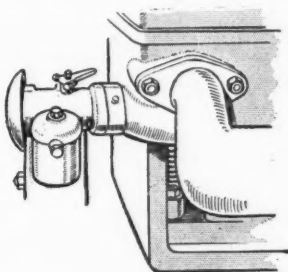


New six-cylinder Karrier engine designed by Ricardo. Has single-sleeve valves and central flywheel in crankcase. Note ribbed aluminum oil cooler on induction manifold

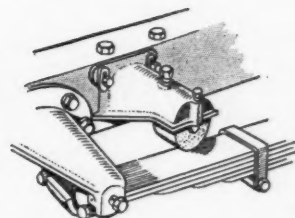
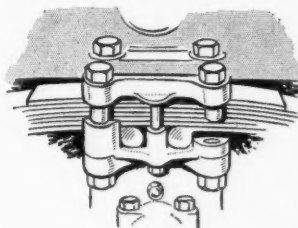


Above—Engine oil cooler on new single-sleeve six-cylinder Karrier engine

Below—In the Bristol engine the carburetor is flange-fixed to the front end of an induction manifold cast in the side of the cylinder block



Below—On the Commer six-wheeler the inverted half-elliptic springs are located endwise by the main leaf being divided at the center



Above—On the new model Thornycroft commercial chassis adjustable rubber buffers are provided on the frame side rail to limit the maximum stress to which the springs may be subjected

The sleeve valves are operated by a layshaft through worm gears and spherical white metal bearings, the layshaft being driven by triple eccentric rods of duralumin. From the Stromberg carburetor, induction is effected through a tract formed partially in the cylinder casting and partially by a cover plate, with deflectors directing the mixture to each port.

Using the same six-cylinder engine design in each case but in two sizes as to bore, Guy, has produced a new range of passenger chassis, four and six-wheelers, and a 7 long-ton truck chassis. The smaller power unit (4 x 5½ in.) is fitted to two four-wheeled chassis, one with a forward driving position for 32 seaters and the other with normal control for 28 seaters; the same engine occurs in two forward driving six-wheelers for 32 and 39 passenger bodies respectively. The larger engine is used for two six-wheelers for double-deck buses, one for 66 seats and the other for 72. The seven-tonner also has the larger engine with a forward driving position and pneumatic tires as in all other cases.

Inclined Side Valves

The engine design embodies the steeply inclined side valves operated by long rockers that have always featured Guy engines (excepting a Knight sleeve Six that was used for awhile). The 4 in. bore engine develops 80 b.h.p. at 2300 r.p.m. and the 4¼ in. 100 b.h.p. Six-wheel braking is fitted, with vacuum servo operation. A new single-plate clutch and four-speed gearset are used.

Another new six-wheeler is a British F.W.D., a notable point of which is that the previous F.W.D. feature—a front wheel drive—is retained, resulting in the drive occurring through all six wheels, though a control lever is provided to disconnect the drive to the front when traction conditions are favorable.

Berliet is showing a six-wheeler with side chain final drive to the foremost pair of rear wheels, the rearmost being load carriers only. This is a truck chassis for 10-ton loads, and in that respect it resembles a new Leyland truck which also has two-wheel drive but by worm gearing; the latter truck has the Longframe (Danish) system of rear suspension in which a half-elliptic spring on each side serves for both axles.

Commer has a range of four new chassis for passenger services, all of which have identical frames, despite two being six-wheelers and two four-wheelers; this is effected by making the arch over the rear axles longer than usual for a single axle. The only difference between the two pairs of models is that one has a forward and the other a normal driving position.

Another new Commer is a low level runabout truck

for 4500 lb. net loads. It has a 2 15/16 x 4 9/16 in. four-cylinder engine developing 31½ b.h.p. at 2000 r.p.m. and is mounted on 24 x 5 in. solid tires. A sixth new model is a speed truck for 3300 lb. loads; a four-cylinder 3 1/8 x 5 1/2 in. engine is used with overhead inlet valves, the design of which suggests that it is the 15.9 hp. four engine of the associated Humber private cars.

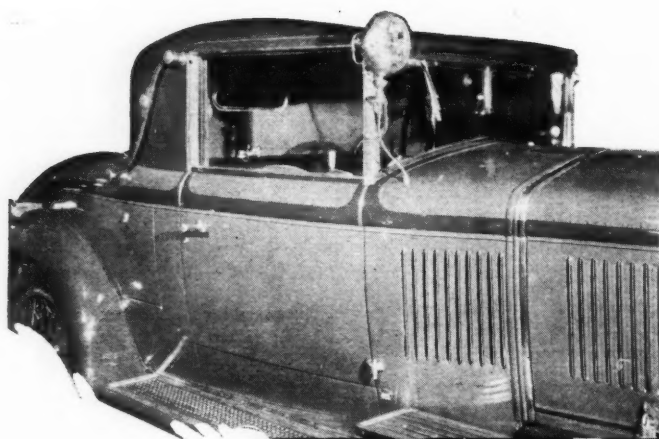
Two Scottish makers show six-wheelers, viz., Albion and Halley. The former is a truck chassis for four long-ton loads and is designed to conform with the War Department subsidy scheme, having a four-speed gearset with an auxiliary transmission giving a second set of four (low speed) ratios; this is a four-cylinder 4 5/16 x 4 3/4 in. model with a relatively short wheel-base, viz., 12 ft. 6 in. (mean) and a frame height of 34 in.

The Halley is a low frame (24 in.) chassis for 30 passenger coach or bus bodywork; it has a six-cylinder 3 3/4 x 5 1/2 in. engine, unit four-speed gearset and orthodox features in the rear axle construction, suspension and drive.

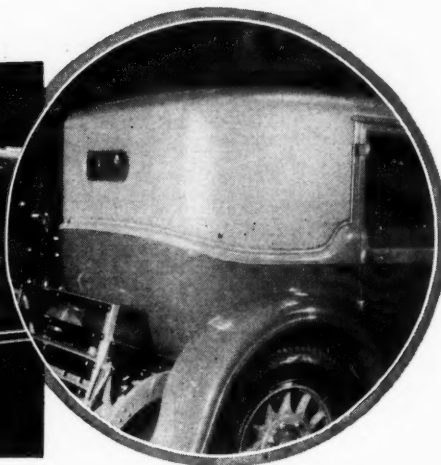
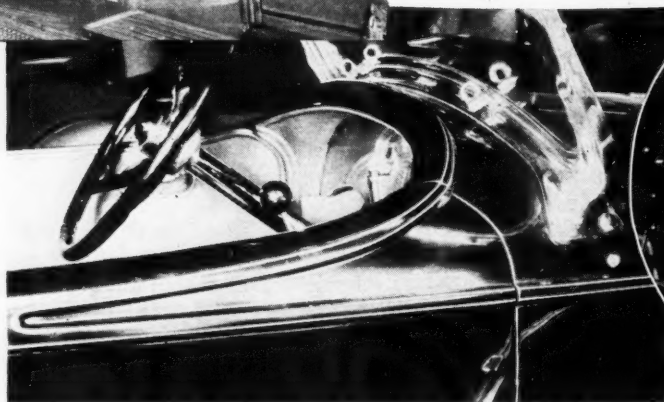
Among the new six-cylinder low-frame four-wheelers are the Bean, Clyde, Pagefield and Thornycroft among British makes, while Saurer (Swiss), Lancia (Italian) and Mercedes (German) are representative of European Continental practice. Mercedes is also showing a six-cylinder Diesel-engined 5-ton truck.

The Saurer chassis for 40-passenger bodies bristles with distinctive features. Its six-cylinder 3 5/16 x 5 5/8 in. engine has overhead pushrod operated valves, a block casting for cylinder and crankcase and a power output of 105 b.h.p. at 1600 r.p.m. at which speed the inclosed centrifugal governor operates. Seven large diameter roller bearings carry the built-up crankshaft, which has a Lanchester type vibration damper. A multiple-disk clutch and four-speed gearset are mounted as a unit with the engine in three rubber lined trunnion bearings; behind the powerplant the frame drops sharply to a height of only 16½ in. from the ground, maintaining that level apart from an arch over the rear axle. The latter contains bevel gearing having a ratio of only 2 to 1 with driveshafts below the wheel center for a helical spur gear final drive to the splayed rear wheels, this second reduction being 3.35 to 1.

Among other imported makes of trucks and buses the following American productions are shown at Olympia: Chevrolet, Dodge, G.M.C., Graham, International, Reo, Studebaker, Willys-Knight and Willys-Overland. Twenty-seven British makes of gasoline trucks are showing, 10 French, three Italian and one each Swiss, German and Belgian.



Above: This Castagna collapsible coupe body on an Isotta-Fraschini chassis has several unique features including cowl louvers, a hinge at the top of the door pillar, three-piece windshield and independently adjustable front seats. Center: The molding on this Locke-Lincoln touring car branches at the front, one part being carried across the rear of the cowl. Right: The molding on this Fleetwood-Packard is typical of a tendency toward emphasizing the physical characteristics of this part of the body design.



ONCE more the custom body builders of the world are displaying their latest creations in motor coach work at the Twenty-third Annual Automobile Salon now in progress at the Hotel Commodore, New York. Over 90 cars are being exhibited including chassis from five countries and the products of some 16 body builders.

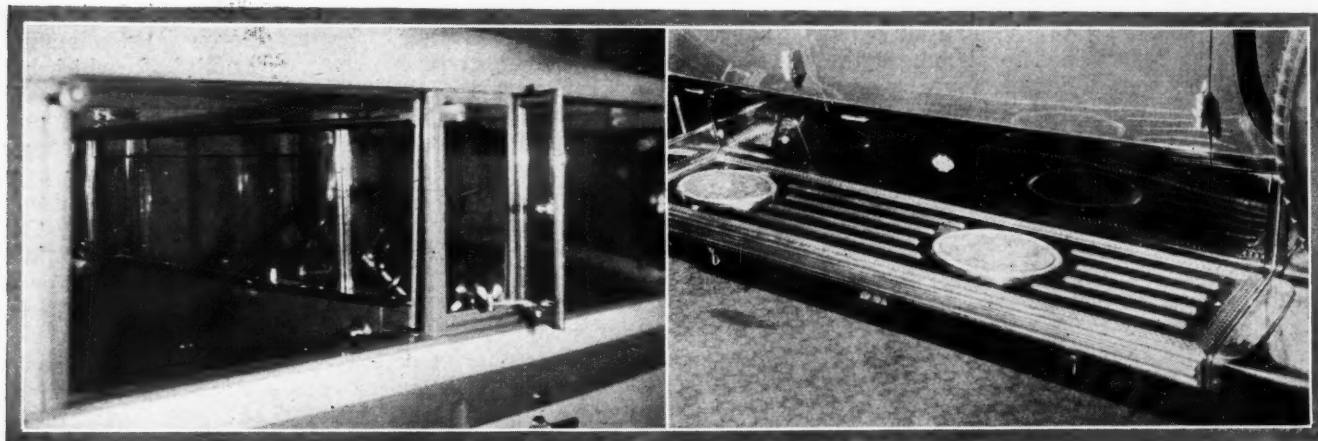
The design trend most evident in this year's display is that of all-weather or collapsible bodies which was apparent in a small degree at the Salon of last year. The development has progressed greatly during 1927 so that at the present display well over 25 per cent of all bodies on exhibition embody the collapsible top feature to some extent.

In addition to those bodies in which the entire top is collapsible, there are a considerable number of otherwise conventional sedans and limousines—about 6 per cent of the total—which have the landau feature of a collapsing rear quarter.

Colors continue to be used with vigor although there has been little change from last year's display, in which bold coloring reached its maximum. Grays predominate as a basic color in the bodies exhibited, with many blues, reds and yellows and all their tones and shades. A few employ black as a base.

In regard to molding treatment, it now appears to be conventional to be unconventional and there is, apparently, no particular method which is favored over others. In some cases it extends from the radiator shell all around the body, such as was very popular a few years ago, and in other cases it has been entirely eliminated.

Other features employed on a number of cars include



Left: This Dietrich collapsible sedan built for Lincoln has a permanent center framing in which is a lowering glass partition. Note also the ventilating window between the doors. Right: The running board of this Sala body built for Isotta-Fraschini is typical of the present trend toward the use of walnut with polished metal treads.

Bodies Featured York Salon

25 per cent of exhibits at this year's show have "all-weather" tops. Bold colors still much in evidence. Molding treatment is along unconventional lines.

By K. W. Stillman

the use of walnut running boards fitted with polished metal treads or wearing strips; interchangeable wood spoke wheels which can be applied in the same fashion as wire and disk wheels; very pronounced moldings, often from 3 to 4 in. wide and extending up to 2 in. beyond the panels; door lock mechanisms which can be operated with ease so that slamming is not necessary to close them properly—this feature is particularly

noticeable on some foreign bodies; adjustable front seats; the return of wicker work for exterior decorations; quite

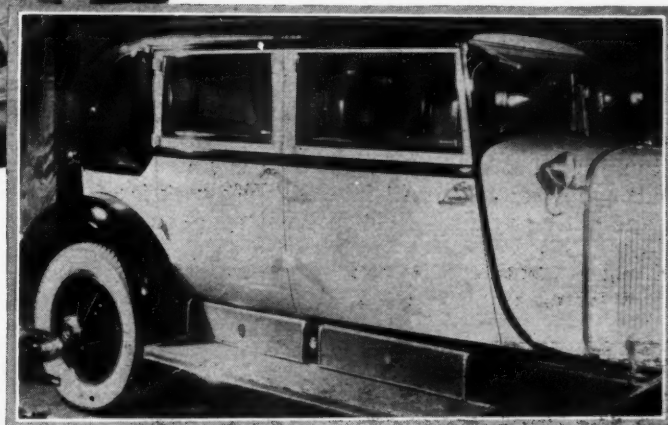
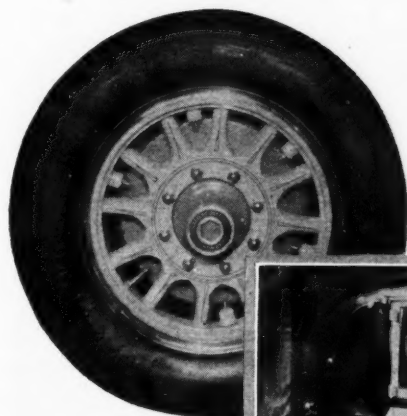
noticeable down-sweep of rear quarter tops in closed cars; interior hardwood lacquered in colors to match the upholstery and trim materials and gas tanks at rear protected by wood slats which also serve as the base of trunk racks.

The 1927 Salon is representative of the world's best chassis and coach work, including as it does exhibitions from five foreign countries in the Isotta-Fraschini, Mercedes, Minerva, Renault and Rolls-Royce. Foreign body builders having exhibits include Sala, Hibbard-Darrin, Keppner and Castagna. American coach exhibitors include Brewster, Brunn, Derham, Dietrich, Fisher, Fleetwood, Holbrook, Judkins, Le Baron, Locke, Rollston, Weymann and Willoughby. American chassis on display include Cadillac, Chrysler, Franklin, LaSalle, Lincoln, Packard, Pierce-Arrow, Stearns-Knight, Stutz and Cunningham.

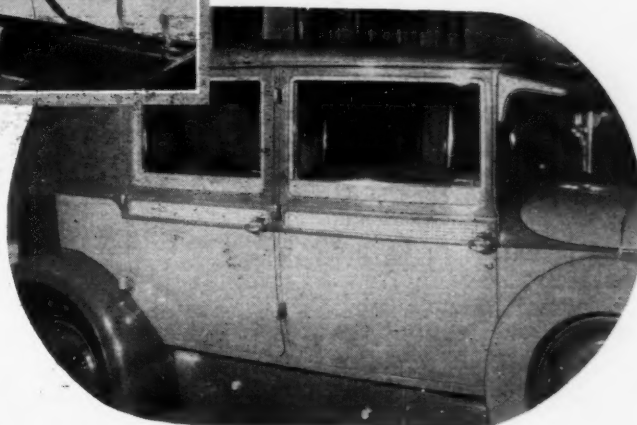
As is usual at Salons, the largest number of body models exhibited are variations of the town car type, 34 per cent of the total exhibits being of this nature. More or less conventional sedan, coupes and limousines make up about 33 per cent of the total. The next in importance are collapsible coupes and sport-type open cars—two and four-seaters—each of which contributes

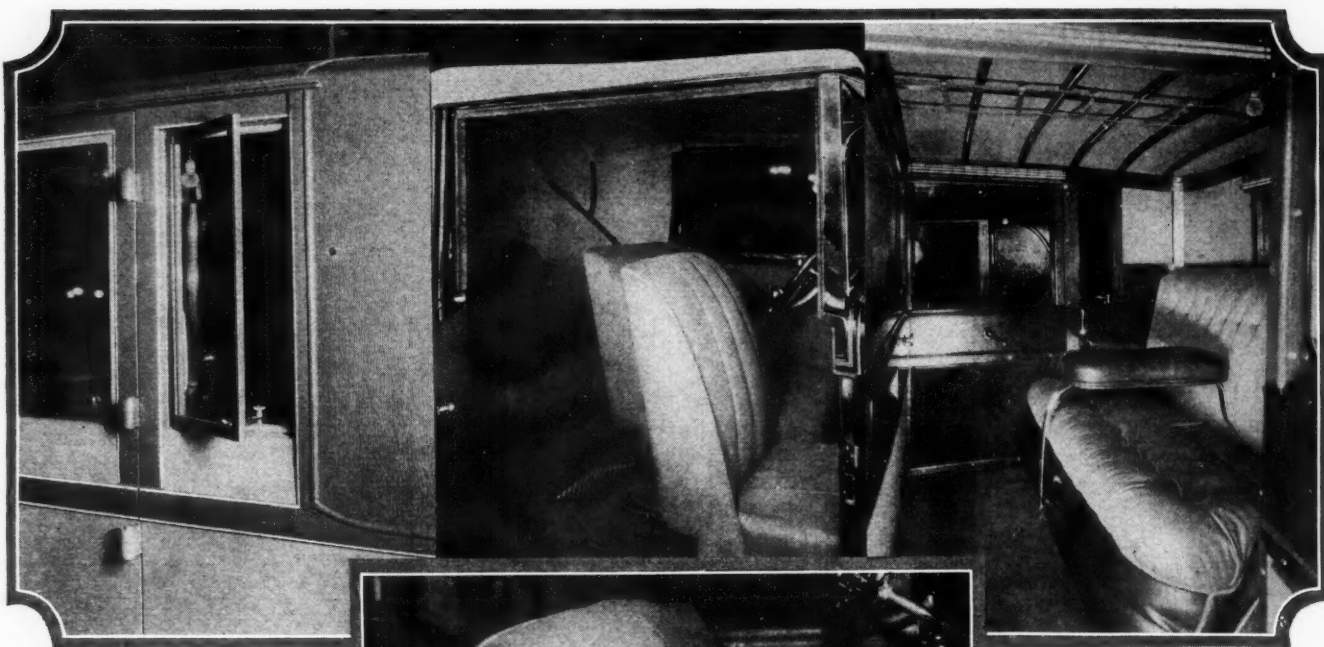


Holbrook combines a top and bottom belt at the rear of this Franklin sedan and makes it cover the entire rear of the body

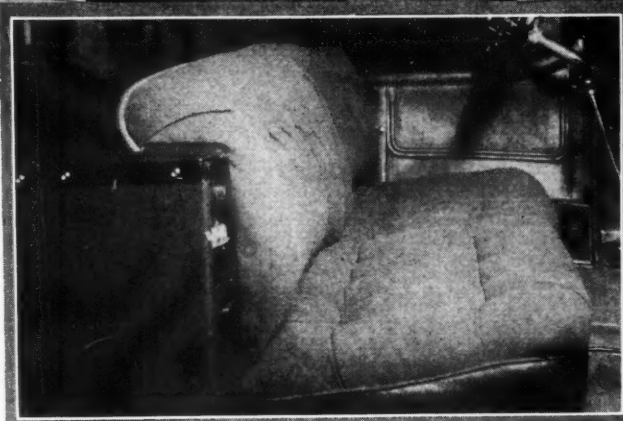


Above: Detachable artillery wheels which are interchangeable with wire and disk wheels are used on several Packard chassis. Center: A rather distinctive molding treatment is to be found on this Brunn sedan mounted on a Cadillac chassis. Right: In one of the Derham bodies wicker work is employed as a belt





Upper left: An example of the ventilating window as used by Brewster in a body mounted on Rolls-Royce chassis. Center: An interior view of the Locke-Stutz collapsible, eight-passenger coupe showing how entrance is made to the occasional seats under the top. Behind these seats and outside the top is a conventional rumble seat for two more passengers. Upper right: This Rolls-Royce gentleman's sedan-limousine



has walnut trim on the front seat back and doors, a leather covered removable center armrest, leather-trimmed cloth upholstery and ventilating panels behind the rear doors. Below: Brewster has developed what appears to be a very comfortable front seat design to give the impression of individual seats as shown in this Rolls-Royce touring car which, incidentally, is upholstered in whipcord

about 10 per cent to the total exhibits. Collapsible sedans make up 7 per cent and sedans in which the rear quarter only is collapsible make up the rest—about 6 per cent.

So many novelties are introduced on individual cars that it would be tedious to describe them all.

Two cars combine the advantages of rumble seat roadsters or coupes with those of closed cars. A Lincoln Brunn has two occasional seats located under the collapsible top which are easily accessible through exceptionally wide doors and forward sliding and tilting front seats. A Locke body on a Stutz chassis carries this idea even farther by providing a rumble seat in the rear in addition to two occasional seats beneath the collapsible top. This job seats eight passengers.

Another Locke body on a Chrysler 80 chassis is of the sport touring type and is unique in having but two doors, in front, the rear seats being reached by tilting the front seats. The entire body to the rear of the doors is covered with a

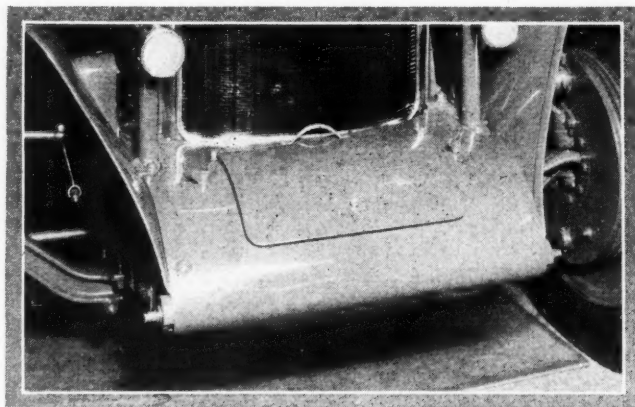
very fine wicker work laid over black lacquer.

A number of cars are provided with narrow ventilating windows for the rear seat passengers. A Brewster-Rolls-Royce limousine has a narrow rear quarter window which swings out. A number of Dietrich collapsible sedan bodies also have this feature, the ventilating window being located between the front and rear doors.

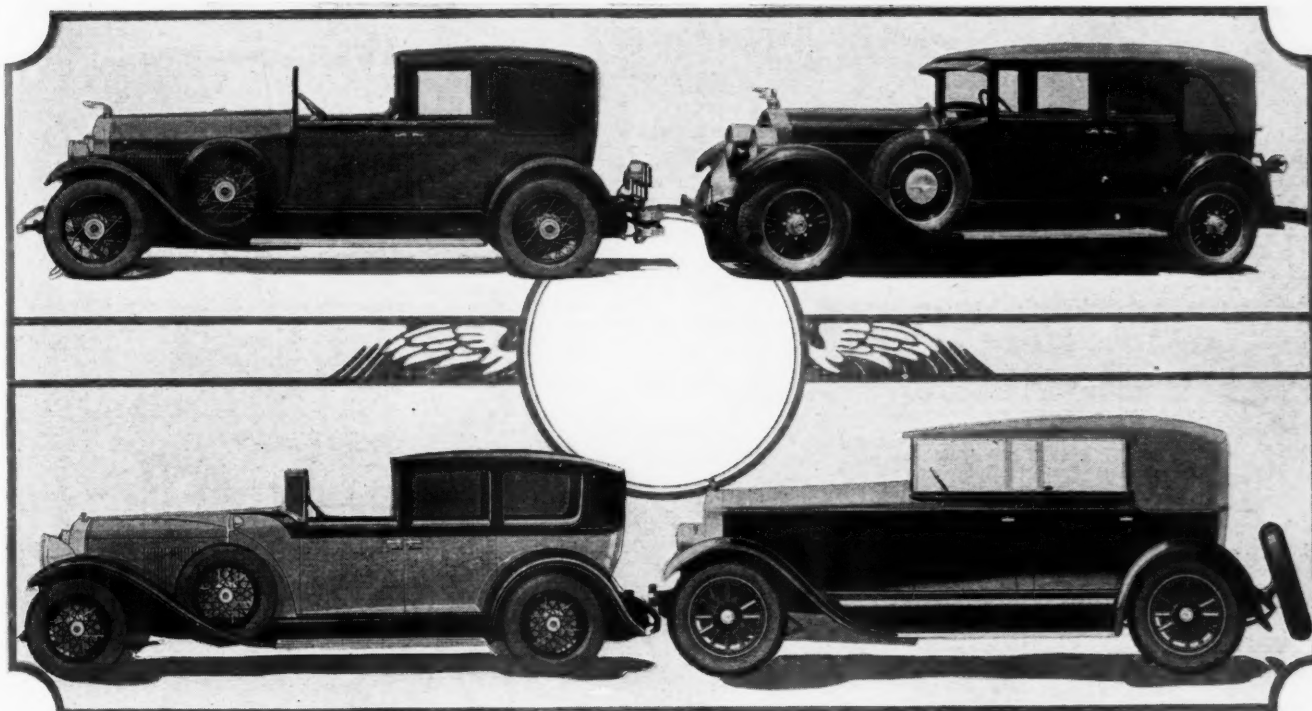
A most interesting car is a collapsible coupe built by Castagna and mounted on an Isotta-Fraschini chassis. All interior woodwork is of bird's eye maple. The individual front seats are completely adjustable with an

adjustable foot rest for the front seat passengers. The windshield is in three pieces, having a horizontal division a few inches above the cowl and a vertical division of the upper part, which overlaps the lower part by about an inch. The hood louvres are continued back across the cowl and are provided with individual adjustments to ventilate the front seat.

Dietrich has developed a convertible sedan construction which appears to be very satisfactory.



Minerva employs the space between the front spring horns for an occasional tool chest or storage compartment



Upper left: A Lincoln all-weather cabriolet by LeBaron embodying the convertible front compartment design. Upper right: This LeBaron sedan-limousine on a Packard chassis has a very light partition so that when the glass is lowered between the front and rear compartments a real sedan effect is achieved. Lower left: Fleetwood transformable limousine brougham on a Cadillac chassis. Notice the molding treatment on the hood and cowl. This car is finished in shades of green and blue. Lower right: Convertible sedan designed by Dietrich for Franklin chassis. The whole top can be folded into a small recess formed in the rear of the body, the glass windows disappearing into the doors

In one variation there are permanent pillars, very narrow, between the front and rear doors which support the top and also provide a frame for a lowering partition separating the front and rear compartments. In other models this permanent construction is made removable and in both types the top collapses very completely and makes a very compact bundle when folded.

Gray is the most popular color for main body panels and is followed closely by blue, red and yellows or creams. Blacks, browns and greens follow in the order named. Although these may not sound particularly striking, the many tones and shades employed and the manner in which they are contrasted with trim colors make a very colorful display. The combinations are almost endless and it is difficult to select the most striking ones, although a few outstanding harmonies may be described. In practically every instance the upholstery and trim materials have been selected to match and harmonize with the exterior finish so that indication of the latter gives information about the interior.

Dark Blue and Sand

Le Baron, for example, employs two shades of rich blue, which appear black under artificial light, with sand-colored window reveals on a Stutz sedan. A striking combination of ivory and black is employed on another Le Baron-Stutz. Brunn also has an ivory and black creation in a Lincoln sedan body. A Fisher-Cadillac sedan is finished in iridescent blue and green to simulate the colors found on a South African butterfly.

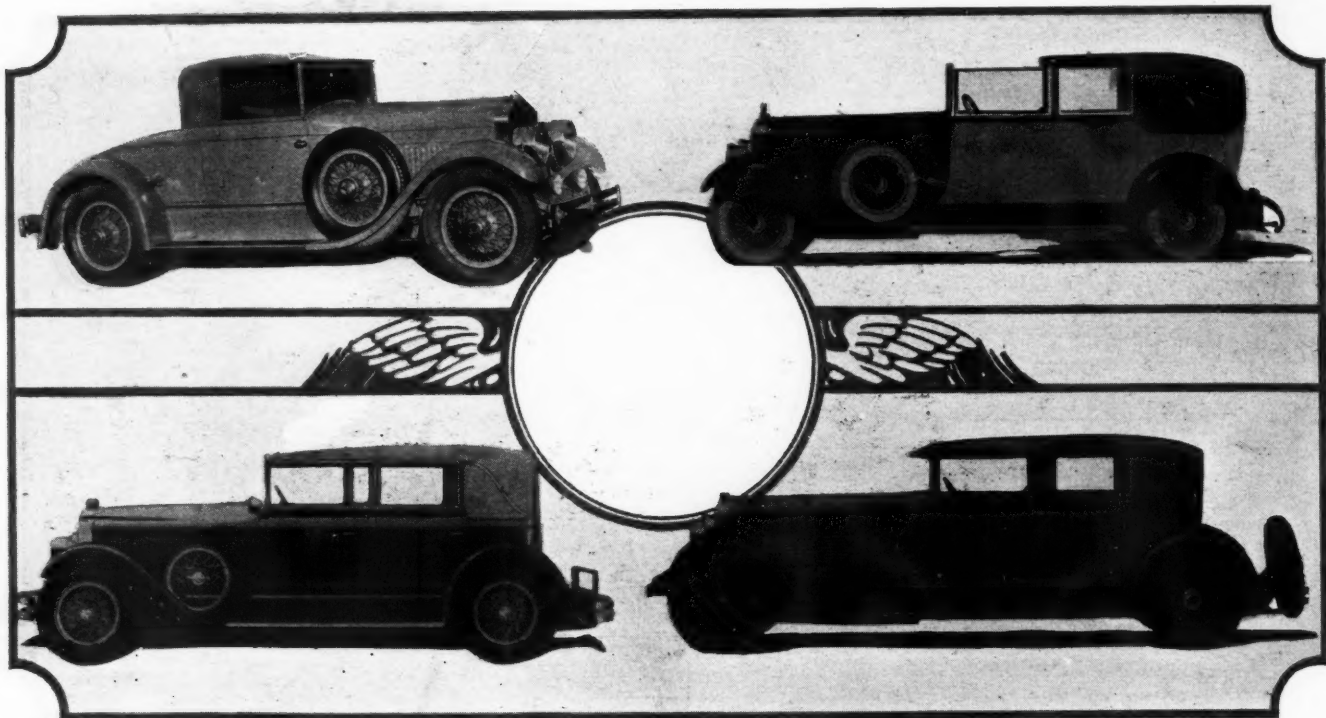
A Fisher-Fleetwood-Cadillac sedan has deep brown upper structure, fenders, moldings and running gear and bright red body panels. A convertible sedan built by Dietrich for the Franklin chassis is finished in polished black lacquer with canary yellow cowl and semi-belt. A brilliant vermillion molding at the bottom

of the body extends the entire length of the car. Another Franklin with Willoughby body is finished in blue with black superstructure and has cream window reveals and a short cream colored band just below the windows and only extending the width of the windows.

A Lock-Chrysler touring model is finished in black with cream belt and trim, the cream being carried in the distinctive radiator flutes of the Chrysler hood. A Brewster cabriolet on Rolls-Royce chassis is very strikingly finished in cream with brown trim. A Cunningham town car is finished entirely in black with silver trim, this combination being carried out in the wire wheels which have black hubs and nickel spokes. A Fisher sedan on LaSalle chassis is finished in orchid with rose moldings and trim and appears to be a direct importation from milady's boudoir.

As mentioned before there appears to be no standard method of molding treatment such as there was a few years ago. Only a few models have the one-time conventional through molding while there are several with none at all. An example of the latter type is the Franklin-Willoughby job mentioned before which, in lieu of moldings, has short narrow panels underneath the rear windows. A Locke coupe built for Lincoln has a circular-shaped molding which starts at the junction of the top and the body at the rear and sweeps down under the door and then up to meet a vertical front molding on the front pillar. In a Locke-Lincoln touring car the molding branches just in front of the front door and goes around the cowl edge which extends a few inches back of the windshield. In a number of bodies a molding is placed along the bottom beneath the doors. Sometimes this was the only molding employed and in other cases it augmented one above the doors.

Several makers employ wicker work for belts. A Holbrook town car built for Minerva has an interesting treatment of molding or, rather, a panel arrangement



Upper left: A roadster model which was exhibited by Cunningham. Upper right: All-weather cabriolet built by Brunn for the Stearns-Knight chassis. The interior is finished in cloth and the driver's compartment in black leather. Roof and quarters are black leather. Main color is gray with the balance of the car in black. Lower left: Dietrich convertible sedan mounted on Chrysler "80" chassis. The top is fully collapsible, glass in all four doors can be raised or lowered, as can a center glass partition dividing the front from the rear compartments. Lower right: This Stutz sport sedan designed by LeBaron is only 68 in. from ground to roof. The color scheme is ivory and black. Walnut running boards harmonize with the walnut interior fittings

which is used in place of a molding. The lower portion of the body panels, along a line which sweeps from the junction of the top and body at the rear down to the bottom front of the front door, is raised noticeably above the rest of the body and is finished in a different shade of red from that employed in the upper portion.

Decoration of interiors has usually been confined to the paneling on the doors and the front seat back, most upholstery cloths being of plain fabrics.

The paneling in many bodies is very elaborate with mosaics and inlays of fine woods employed in conjunction with brocades and needle point on the door panels. Pyroxylin type finishes which have been given a high polish are used on a considerably greater number of models than ever before while another popular feature is the use of Triplex, a non-shatterable glass, in the windows and windshields of about 15 bodies.

There are very few closed cars in which the rear seat occupants are not provided with armrests on the sides and in many exhibits there is also a removable armrest in the center for use when there are but two rear seat passengers.

Fittings continue to be what one expects in a custom body and include everything one might desire while traveling. The ultimate fitting, possibly, is a signaling device fitted in an Isotta-Fraschini sedan by which pressure of the proper button on a board handy to the rear seat occupants flashes a signal under the eyes of the chauffeur and directs him with "slow," "stop," "turn left," "home," and various other usual commands.

German Tire Tests

A SERIES of experiments on the various kinds of vehicle tires has been carried out at the Motor

Vehicle Laboratory of the Berlin Technical College by Professor Gabriel Becker and associates, and the results are presented and discussed in a pamphlet entitled "Automobilreifen," of which Professor Becker is the author and which is published by M. Krayn, Berlin W. It appears that the tests were carried out at the instigation of the German Department of Transport and were intended to throw light on the effect of various kinds of tire on road wear. The tests covered all four types of tire in general use, viz., solid rubber, cushion, high-pressure and low-pressure pneumatic.

One of the conceptions used in the discussion of tire quality is the resistance to deformation, which is equal to the load which must be added to that originally on the tire when there is an obstacle of a given height at the center of the contact surface, in order to keep the distance from the ground to the center of the wheel constant. Naturally this resistance to deformation is greatest for solid rubber tires.

When a wheel passes over an obstacle there is an increase in the ground pressure, but this increase will be the smaller the greater the energy absorbing capacity of the tire. In fact, the ability to absorb energy determines the quality of a tire as a cushioning device. Prof. Becker gives the increase in stored energy for an increase of 1000 kg. in the load for each of the tires. He also presents graphs showing the relation between energy stored for a load increase of 1000 kg. and proportional increase in ground pressure, and finds that there is a pronounced boundary line between highly elastic and moderately elastic tires, characterized by an increase in stored energy of 72 ft.-lb. for an increase in load of 2200 lb.

Where specific test data are presented the make and size of tire are given in all cases. Dimensioned cross sections of the tires tested are also given.

Just Among Ourselves

A Reply to Our Article on Buses and Railways

IN what seems to us to be the crux of an article replying to our recent discussion about "What is the Future of Bus and Railway Cooperation," our good friends of the *Electric Railway Journal* in their issue of Nov. 19 say that the continued sale of buses depends not on the whims and prejudices of any particular group of operators, but upon the ability of the bus "to earn a continuing profit while discharging the full obligations of a common carrier." Then, following this not-to-be-disputed statement, they continue "Wherever and whenever they (buses) can do that successfully in coordination with existing rail lines they will be used by railway operators and the prejudices of any particular individual or group will not check even temporarily the inexorable working of economic law. Wherever buses can do this more successfully than rail lines they will replace rails regardless of whether or not existing operating managements are friendly or unfriendly to their use."

* * *

Part We Agree With and Part We Don't

WITH the latter part of the foregoing statement we agree in full, but with the first part not at all. "The prejudices of any particular individual or group" unquestionably can check temporarily, and perhaps for a long while, the inexorable working of economic law particularly when that individual or group has possession, the well-known nine points of the law, to start with. There can be no arguing with the soundness of the E.R.J.'s contention that not only the manufacturer of buses but the operators of his product must make money permanently and that the use of buses

properly may extend only to those fields where such vehicles are of greater economic service to the community than are other forms of transportation. We still feel, however, that the electric railway interests are not unbiased and desirable agencies with whom to leave the sole judgment as to the economic value of the bus. Our disagreement apparently is not one of principle, but a difference as to what agencies are to interpret the principles in practical, daily activities.

* * *

The Importance of the Individual

OUR personal reading has been pretty sporadic of late, what with one thing and another keeping us busier than a congressman at a home-town picnic. We find most of our literary adventures in recent weeks to have been concerned largely with diving through mystery stories or trying to get thrilled with the more formal recent and historically accurate of the autobiographies of the Gentlemen - P r e f e r - Blondes school. We have found time, however, to complete "The World in the Making," one of Count Hermann Keyserling's more lately translated works and were much more impressed with the emphasis which he continues to lay on the development of the individual inner being as the only process by which general culture levels may be raised. Experience does seem to us to show that mass or group growth simply is the sum of the development of the individuals comprising the group. Consequently, in automotive personnel work and in trying for the best adjustment of men to their jobs, maximum results usually can be obtained only by working primarily with the individual as an individual insofar as this is possible.

Mass treatment of industrial relations frequently fails to produce the desired results.

* * *

\$200,000,000 Annually for Industrial Research

INDUSTRIAL corporations and the Federal Government spend \$200,000,000 annually for industrial research, according to the National Industrial Conference Board. Of this sum industry spends \$2 for every \$1 spent by the United States. In 1921 only 578 companies maintained research departments or laboratories. Today more than 1000 concerns have research divisions. In addition 70 trade associations are spending \$15,000,000 a year and 152 schools and colleges about \$1,500,000 on such operations.

* * *

Automotive Industry a Leader in Such Work

INDUSTRIES whose research expenditures were greatest five years ago are those which have scored the greatest relative growth since, the Board points out. The greatest amount spent by any one manufacturing concern was more than \$5,250,000 while a public utility corporation spent approximately \$13,000,000 within the year. The automotive industry has long since recognized the necessity of accurate facts as the basis of development, particularly in its technical work, and more recently in the preparation of its marketing plans. By continuing in the van of research activity, as our industry is, it is assuring itself of a continued place of leadership under the conditions of the new competition of industry with industry. And by adopting a cooperative attitude as regards exchange of information among its various branches, the automotive industry will further that unity of action which is so necessary under these particular conditions.—N. G. S.

How Dealers Are Attacking Problem of Keeping the Junked Cars JUNKED

Data of interest to car manufacturers and parts makers secured by recent study of business methods followed by cooperative dealer salvaging companies.

By Lewis C. Dibble



SALVAGING of old automobiles by companies cooperatively owned and operated by dealers is an activity that has attracted unusual attention in the automotive industry in recent months.

The prime idea behind group salvaging operations is definitely to remove so-called junk automobiles from the channels of trade. Of course when one considers the staggering number of old cars in existence it seems almost an impossible task actually to relegate all of them to the junk heap, hence it appears that cooperative salvaging is not strictly a cure-all. But it is a possible remedy for one of the factors which make used automobiles a serious drain on profits.

In several fairly large cities the dealers have banded together and are now conducting their own salvaging business while dealers in a number of other cities are known to be interested to the point that they are investigating the advisability of undertaking similar activities.

The companies now in operation have been functioning for less than a year. For that reason it is rather difficult at this date to determine precisely their value to the industry or to predict with any degree of accuracy the potential size the activity may gain over a period of years. It is, on the other hand, a topic that is particularly interesting to car and parts manufacturers, for it deals with a hitherto undeveloped phase of the automobile business.

Because of the increasing interest that has been

manifested in many quarters in salvaging operations, an investigation was made of the activities to date, and the reasons for establishing a group salvaging business, the various problems that arise and the means that have been taken to cope with them, will be outlined in sequence. It must be remembered that the information represents facts gathered from various cities. The study covered both privately and group-owned operations, and as nearly as possible averages will be used so that they could apply more or less to any locality.

Salvaging of automobiles by companies cooperatively owned and operated by dealers have been undertaken in two ways:

- (a) To sell used parts and scrap.
- (b) Selling scrap materials only.

The advantages to be gained by the operation of such an institution are:

1. To keep out of circulation all cars and trucks which have been sold as junk to junk dealers.
2. To retain in the dealer organization any net profits which may be derived from the salvaging of cars.

This activity, as any dealer will appreciate, is closely allied to the used car problem, since he has many times had the experience of being required to compete with other dealers on an allowance on a car which he has previously sold as junk.

The used car loss due to the circulation of these cars cannot be estimated and yet it is known to exist and



must represent quite an item since it is estimated that about 30 per cent of the cars sold to the independent junk yard are re-sold as complete cars. This is not an unreasonable figure when a statement made by the United Wrecking Co. of Kansas City, is considered. The statement indicated that around 80 per cent of the cars received at the yard come in on their own power.

In figuring on salvaging operations in any community it is perhaps best, after all, to refer back to the old law which governs business success—the law of supply and demand. By this is meant the establishing of the relation of the number of cars available for salvaging and the demand for used parts and salvage.

In view of the fact that the greatest portion of net sales is derived from used parts, it follows that this classification of merchandise becomes the most important element. In other words, it might be said that the sale of used parts will cover the cost of sales and cost of operations, whereas the net profit will be derived from the sale of salvaged material which represents only a small portion of the total net sales.

Taking up the matter of sales, a study shows that

To predict the future scope of dealer cooperative salvaging operations at this time would be difficult. A study of the question has revealed there are many things in favor of such an operation, provided it can be worked out on a self-sustaining basis. With the interest that is being manifest in the subject it is likely that the industry will hear and learn much more about it in the months to come

the average car will cost the salvage yard about \$15. In some cities it is lower than this, in others higher, but as a means of giving a fair example we are using the average. If towing service is rendered it will add

approximately \$2 to the cost of the car by the time it is brought into the yard. The actual cost of dismantling and sorting materials in the car will add another \$2.50 to \$3. Overhead covering such items as rent, salaries and other incidental expenses will amount to possibly \$6 or \$7 a car. The total cost of sales and expenses of the car then will be about \$26.

The average weight of possible salvage material if everything were sold for salvage would be about 2000 lb. or 1 ton. At present salvage prices it is estimated that the scrap in sufficient quantities would bring about \$12 a ton. Obviously then it is necessary to sell some of the material as used parts as they will bring a much larger price than if they were sold for salvage.

The investigation indicates that dealer organizations interested in cooperative salvaging probably should first of all obtain from their own records the total number of cars sold as junk during the previous year and also the amount that was received for them.

This information will indicate the approximate number of cars which will be available as junk and the average price which will have to be paid to obtain them and will prove valuable after the enterprise has been launched since independent junk yards invariably increase the amount they will allow dealers after a cooperative salvaging operation has been started.

Naturally the greatest portion of cars will come from dealers over a period of a year. However, in the winter months when a dealer's supply is low a very ready source exists among owners, who, for one reason or another, feel the necessity of getting the money out of their cars. It is also interesting to note that experience indicates that owners will sell their cars to junk yards at a price from 20 to 30 per cent below the amount which must be paid dealers.

Many owners of old unserviceable cars are so anxious to get rid of them that they even abandon them in the streets. The City of Detroit has found it necessary to set up its own salvaging plant to keep the streets clear of such cars. The cars are towed to the Detroit House of Correction and, after being advertised for 30 days, are broken up by prison labor. Good parts are saved and sold as such while the balance of the automobile goes on the market as scrap. The number of cars which find their way to Detroit's municipal junk heap at times averages 10 a day and city authorities estimate that there are at least 5000 automobiles now abandoned in the streets and alleys which should be towed to the prison and dismantled.

In selecting a location for the salvage yard, the most important factors to consider, it would seem, are convenience to the trade and individual owners, trackage for salvage shipments, sufficient space and low rental. Naturally it seems desirable to locate in the junk yard district from the standpoint of attracting the greatest number of customers. No doubt other low rental property may be available. In the case of Kansas City a very ideal location with sufficient space and buildings was obtained by leasing property which had formerly been utilized by a lumber yard.

Building Requirements

Inasmuch as it is vital to have parts accessible and under cover, due consideration should be given to building requirements. There should be space for disassembling under cover. The amount of space needed for storing complete vehicles is dependent upon whether the yard desires to dismantle these cars as fast as they come in or hold them so that dismantling can be done on a more or less production basis.

Every yard of course will have to have an adequate supply of chisels, hammers, pinch bars and bolt cutters. If desirable, and if insurance rates are not too great, acetylene cutting torches can be used to advantage.

"Where Have I Seen That Car Before?"



All cars which are sold to junk dealers as junk do not stay junked. In many instances they are patched up by the junk dealers and placed back in circulation. Thus dealers have had the experience of being asked to take as a trade-in an old car which they had previously had on their hands, and which they supposed had long ago been reduced to scrap by the junk man to whom they sold it

Power-driven shears may also be used for cutting steel scrap. Parts which have been cleaned make a much more salable appearance and for this reason some of the yards have found it advantageous to use a cleaning tank for cleaning parts before placing them in stock. Compounds used in this work are similar to those used in repair shops.

Observation indicates there are several systems for stocking parts. Some stock them according to makes and models of cars and others by kinds of parts.

The Omaha cooperative yard, in making racks for the heavier parts, utilized salvaged Ford frames for the cross-members.

In selling used parts it naturally should not be the desire to encroach on the new parts business. However, the operation should make every endeavor to obtain the maximum portion of the used parts business in its trading area. The trading area is not confined to the community as it has been found that there is a considerable demand for used parts in the rural districts.

Dealers who are participating in cooperative junking yards defend the sale of used parts by pointing out that such parts will always be procurable; that the independent junkmen will sell them whether the cooperatives do or not; and that the cooperatives may as well get a share of the business, since it can't be suppressed anyway.

Various Sales Methods Used

So far the following sales methods have been employed in varying degrees of intensity: Newspaper advertising, both display and classified; personal solicitation; catalogue; direct mail; handbills and tags placed in old cars. Also, newly established cooperative yards have in most cases obtained splendid aid from the news columns of newspapers.

The prices of used parts are controlled by competitive prices and demand. However, the usual practice is to sell parts at from 50 to 60 per cent of the price of new parts.

While accounting or even bookkeeping is somewhat of a foreign term in the operation of a junk yard, yet it is evident that, in view of the fact that these yards are operated on a cooperative basis, it will be necessary to keep the members informed as to the financial conditions of the company at all times. Most any of the standard bookkeeping systems, it seems, may be adapted to such an operation.

Experience shows that it is desirable to incorporate the salvaging operation of a community as a separate company and to devise a plan whereby the local dealer association retains the stock control of the company. It also appears advisable for the salvaging company, in selecting a manager, to have a person in charge who has a pretty good working idea of the parts business.

Multiplicity of Sizes Putting Heavy Burden on Tire Industry

Chaotic condition discussed by Detroit S.A.E. 40 sizes of balloons needed for original equipment. Dealers and manufacturers compelled to carry huge stocks.

THE session of the Detroit chapter of the Society of Automotive Engineers on Nov. 22 brought a strong reminiscence of similar sessions 10 years ago. Tire size simplification was the subject under discussion, as it was during the war days. As a result of the meetings in 1917 the number of tire sizes was materially reduced, and proportionate savings in cost and dealer stock turnover were thereby achieved. With the advent of the balloon tire, the number of sizes has increased by leaps and bounds, until at the present time there are some 40 different sizes of balloon tires needed for original equipment only, and the number is still growing.

All sides were represented at the meeting. B. J. Lemon of the U. S. Rubber Co., gave the production angle. A paper prepared by H. M. Crane of the General Motors Corp. dealt with the car manufacturer's angle, T. G. Graham of the B. F. Goodrich Co. in addition to analyzing the manufacturer's problems also dealt with the dealer situation, and the discussion was brought to a close by a definition of the Government's attitude as given by R. M. Hudson of the Bureau of Standards.

Increase in Tire Cost

Mr. Lemon in his paper emphasized the necessary increase in cost of tires with multiplicity of sizes. As an example he cited the condition in 1925 when the increase in rubber prices due to the tariff in Britain brought about a decrease in production of 36 per cent with an increase in sales of tire repair materials of 42 per cent. He estimated that 1927 production of casings would be in the neighborhood of 62,000,000, representing an overproduction of some 20 per cent made necessary in order to try to absorb some of the cost incident to rapid changes in tire sizes.

Such sizes according to Mr. Lemon and later speakers differ often only in about $\frac{1}{4}$ in. of sectional diameter, the 40 or more sizes being used on five different wheel sizes and in 10 different sections. With this situation, and overproduction, price-cutting competition is very much in evidence in the tire industry today, according to Mr. Lemon, and many different grades of tires are turned out by manufacturers for both wholesale and retail distribution to obtain in some manner a profit on the investment.

In the absence of Mr. Crane, his paper was read by J. H. Hunt of the Chevrolet Motor Car Co. and president of the S.A.E. Mr. Crane gave as reasons for the vast increase in balloon tire sizes, as required for original equipment, the questions of spring dampening and shock absorbing problems, which are peculiarly affected by changes in balloon tire sizes. Appearance of the tires has also been a determining factor, while

the decrease in wheel diameter recently has contributed extensively. Mr. Crane stated that in his opinion wheel diameter reduction had now about reached the limit, as long as the 56 in. standard tread is retained, giving the question of appearance as a reason. He also suggested that rim size standardization should take precedence over tire size standardization, thereby also facilitating the latter problem. Mr. Crane also ventured the statement that the motor car buying public has shown no interest in the question of tire size simplification.

An interesting fact was brought out by Mr. Graham. He stated that in a recent canvass it was demonstrated that only three per cent of his company's dealers had sufficient capital to carry complete lines of tires and that this three per cent "have enough sense not to do so." This condition has made it necessary for the B. F. Goodrich Co. to maintain a chain of some 150 warehouses all over the country carrying a minimum of 10 tires of each size to supply immediate demands, equivalent to a total of 1500 tires of each size carried in stock. Seventy-five per cent of the present tire sizes represent only 15 per cent of the total business according to Mr. Graham, and present conditions make a three and a half to four time turnover per year in dealer's stocks a good figure as against seven to eight before the advent of the balloon tire. A reduction in tire sizes to about 10 or 12 would enable dealers to turn over tire stocks once a month. At the present time manufacturers are forced to carry a \$15,000,000 inventory of tires which are characterized as slow moving. This "disgraceful" tire waste according to Mr. Graham is due to lack of confidence between—

1. Tire manufacturers
2. Car manufacturers
3. Tire and car manufacturers

The necessity for more confidence between car and tire manufacturers was emphasized by Mr. Hudson of the Bureau of Standards who stated that competition at present was not so much among car manufacturers as between the automotive and other industries, citing as an example the extensive sales and advertising campaigns instigated by other lines such as furniture, radio, and phonographs. Several interesting slides included a table of ownerships of various lines by the people of the United States, the six leading items being:

For 26,000,000 families (1927)
21,000,000 automobiles
12,800,000 homes owned
10,000,000 phonographs
6,000,000 pianos
5,000,000 vacuum cleaners
4,500,000 radio sets

New General Motors Buses Powered With Buick Engines

Two chassis, designed for city and school service respectively, are announced. Former has wheelbase of 162 in. and sells for \$4,400. Latter lists at \$2,150.

By A. F. Denham

TWO buses are now included in the line of vehicles offered by the General Motors Truck Co. Designed for city service work and school work, the two models list at \$4,400 and \$2,150 respectively. Both are powered with the Buick valve-in-head engines, the 21-passenger city service type being mounted on the T-40 truck chassis, with the school bus mounted on the T-20 chassis, the latter having a carrying capacity of 42 children.

In the T-40 chassis the Buick Master Six engine is used, having a bore and stroke of $3\frac{1}{2}$ by $4\frac{3}{4}$ in. and a maximum horsepower in this chassis of 61 at 2000 r.p.m. Wheelbase of the city service bus is 162 in. with a length from dash to end of frame of 190 $\frac{1}{16}$ in. Front tread is $57\frac{1}{2}$ in. with a $63\frac{1}{4}$ in. tread for the rear.

Chassis specifications of the T-40 include the vertical tube and fin type radiator carried on a rigid cast bottom tank, mounted on rubber. A multiple dry disk clutch and a standard shift, three-speed transmission are in unit with the engine. The propeller shaft is in two sections with three metal universal joints. Rear axle is of the semi-floating spiral bevel type in a pressed steel banjo-type housing. Bevel pinion and differential are mounted on ball bearings with the axle shaft bearings of the taper roller type. Standard gear ratios are offered as follows: $5\frac{1}{8}$ to 1, $6\frac{1}{7}$ to 1, and $7\frac{1}{8}$ to 1.

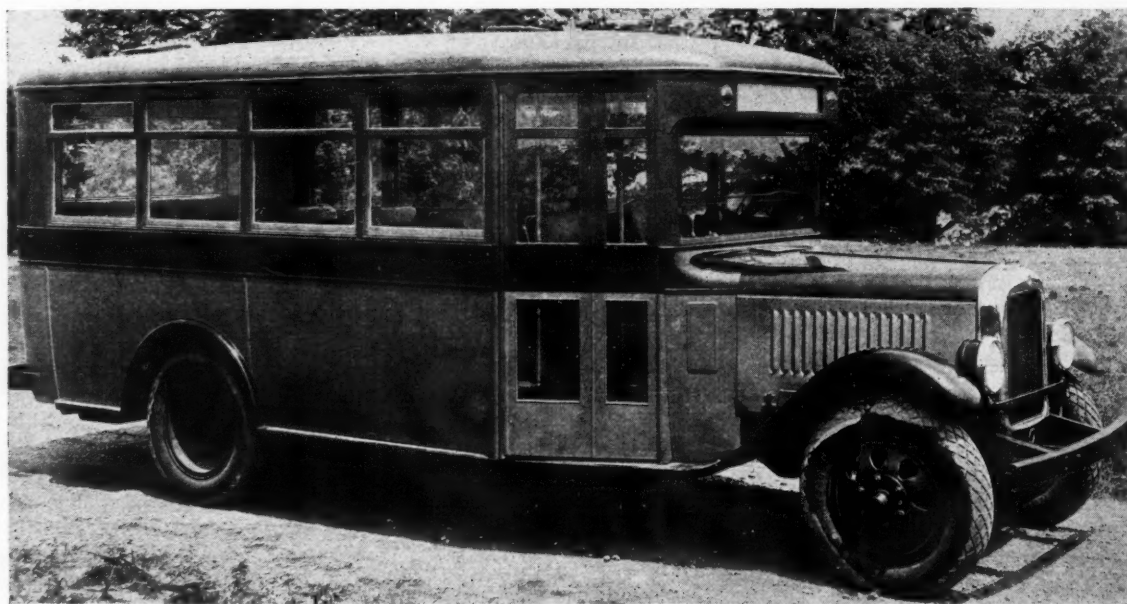
Cam and lever steering gear and I-beam section front axles are standard. Springs are semi-elliptic all-around with the following specifications:

	Length	Width	Shackled	No. of Leaves
Front	38	$2\frac{1}{2}$	Rear end	9
Rear	54	$2\frac{1}{2}$	Both ends	12

Three-shoe, four-wheel Bendix brakes are fitted to the city service bus with 16-in. drums on the front and $17\frac{1}{4}$ -in. drums on the rear wheels, these drums having widths of 2 in. and 3 in. for front and rear respectively. Emergency hand lever operates the rear wheel brakes only.

Tires are 34 by 7.50 balloons front, and 34 by 7.50 dual balloons rear, mounted on spoked steel wheels, the dual rear wheels being mounted on separate hubs. Frames are of pressed channel steel throughout, no tubular members being used. Side members have a maximum depth of $6\frac{1}{2}$ in., flange width of 3 in., and are built of $\frac{1}{4}$ -in. stock. There are four pressed-steel cross-members and seven body outriggers. Gasoline tank capacity is 25 gal.

Standard equipment includes air and oil cleaners, two batteries connected in parallel, with a total rating of 222 amp.-hr., Delco-Remy six-volt electrical system, crankcase ventilating system operated by air from fan, pressed-steel channel type front bumper bolted to frame,



Three-quarter right side view of the new General Motors city service type bus mounted on the T-40 Buick-engined chassis, listing at \$4,400

spare wheel, and combination tail and stoplight. Instrument equipment in addition to the usual ammeter, oil gage, speedometer and controls include an auxiliary generator switch for dome light connections, and a two-gang switch for destination signs.

There are eight double seats in the city service coach, with a rear cross-seat for five passengers. Body construction is of second growth ash, and all joints screwed or bolted in addition to being treated with white lead or glue. There are no exposed wood members, side panels being covered with 20-gage steel, with 22-gage steel or 18-gage aluminum over body pillars. Panels are individually constructed and readily detachable. The 1/4-in. three-ply roof is also covered with 22-gage steel from the edge of the veneer to side rails, with the roof proper covered with 12-oz. duck laid in white lead.

All windows, except the non-raisable rear window, have metal sashes, the latter being set in rubber. Side windows lift 14 1/4 in. In addition to the 30-in. entrance door of the folding type there is a safety door at the left rear 32 in. wide. Interior finish is fibre board over lower body panels, mahogany molding over pillars, and linoleum floor covering. Seats are upholstered in brown leather and are fitted with grab handles. Equipment includes a heating system, allowing exhaust gases to be carried through thin tubes on both sides of body.

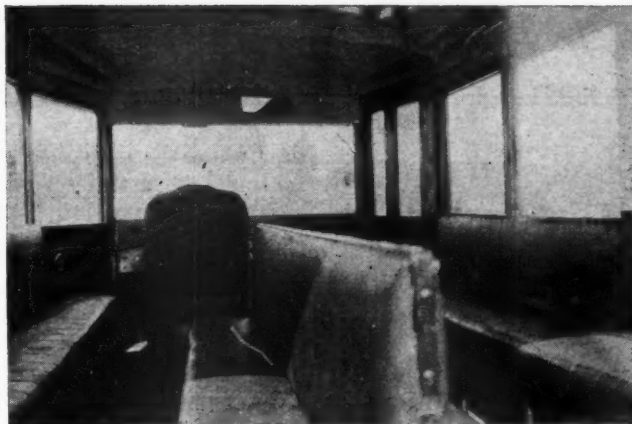
Cowl and Roof Ventilators

In addition to the three cowl ventilators, one on each side, and one in the top, there are three Nichols-Lintern ventilators in the roof. Two-piece windshield, the upper movable part being fitted with a wiper, is standard. Then there are six 21 cp. dome lamps, signal cords located at each seat, curtain at rear of driver's seat, fixed metal sun-visor, roll type destination signs, a grab rail on each side of the aisle, rear vision mirror, front and rear marker lights, with three 4 cp. bulbs to illuminate destination marker, heavy channel type rear bumper, and optional color external lacquer finish.

On the T-20 chassis, used for the school bus, chassis specifications are very similar to those of the T-40, except of course that the Buick Standard Six engine is used and units are smaller and lighter. Frames, for instance, have a maximum depth of 6 in., with 2 1/2-in. flange, and of 3/16-in. stock for the side members with five lighter channel cross-members. Since the wheelbase of this chassis is 150 in. as compared with 162 for the city service bus, the school bus has shorter springs, these having the following specifications:

	Length	Width	Shackled	No. of Leaves
Front . . .	37 3/4	2 1/2	Rear end	7
Rear	50 1/4	2 1/2	Rear end	10

Standard gear for the rear axle of this bus, which is similar in construction to the axle on the city service type is 5.57 to 1. Brakes are of the rear wheel type, dual drums 2 1/4 in. wide and 16 in. in diameter being used. Tires are 30 by 5 high pressure front, and 32



Looking at the interior of the school bus from the rear. Note roomy aisles in spite of use of four rows of longitudinal seats. Note also window regulators

wheels with hollow spokes and separate hubs. Front axles have Elliott ends as against reverse Elliott for the T-40 chassis.

Gasoline tank capacity is 20 gal., mounted on the right side of frame with the filler inset in the body panel. As on the city service type, chassis equipment includes air and oil filters, crankcase ventilating system, front bumper bolted to frame, and combination tail and stoplight. A single six-volt battery is used, also with Delco-Remy electrical system.

General dimensions of the school bus body are:

Capacity	42 children
Overall length	13 ft. 10 in. (body only)
Width	7 ft.
Headroom	5 ft. 6 in.

There are four rows of longitudinal seats, with two aisles, as shown by the accompanying illustration. There is also a cross-seat at the rear with a rated seating capacity of seven. Framework of the body is of second growth ash, with all joints screwed or bolted and glued or treated with white lead. Roof construction is similar to that on the city service type, as are body panels and pillars. Windows are of the lowerable type. Entrance door has a width of 28 in., the lower door panel, as in the city service type, being of wire reinforced glass. There is a grab rail at the door entrance and the step is covered with safety tread.

There is also a safety door at the left rear, 28 in. wide and equipped with a safety door lock. Interior finish is of composition paneling over body panels with body pillars covered with mahogany molding. Seats are upholstered in imitation leather. Heating is by means of pipes under the central longitudinal seats, through which exhaust gases can be passed by operating a valve. Steel guards, perforated, are placed over exposed parts. Ventilation is by means of three Nichols-Lintern ventilators in the roof. There is a one-piece ventilating windshield, crank-operated, equipped with wiper. Two 21 cp. dome lamps furnish interior illumination. A rear view mirror is standard, and exterior finish is in lacquer with colors optional.

The T-20 chassis can also be obtained without body for bus or truck work.

ALTHOUGH the United States has been the pioneer in air mails and at the present time has by far the most extensive system, rapid progress is being made also in Europe and hardly a week passes without announcement of some new line. A recent French Government publication announces the opening of air mails from Paris to Lithuania, Latvia, Esthonia and Finland, by the Paris-Berlin-Riga-Helsingfors air service. A plane leaves Le Bourget flying field near Paris every day except Sunday at 9.25 a. m. The mails arrive at Riga the following day at 10.30 a. m. and at Helsingfors at 3.20 p. m. The gain in time amounts to about 24 hours.

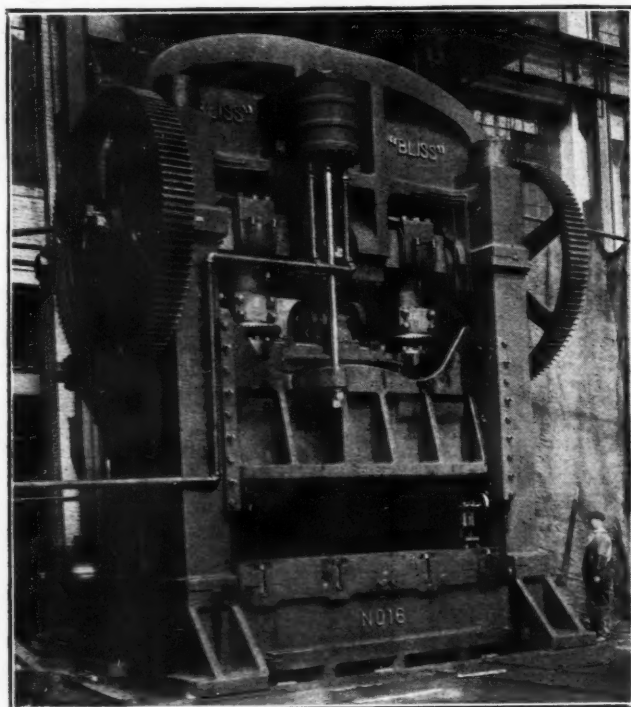
AN international automobile show is to be held in Geneva, Switzerland, March 16-25, 1928.

NEW DEVELOPMENTS—Automotive

Bliss Double-Crank Press

E. W. BLISS CO., of Brooklyn, N. Y., has recently completed a double-crank press in which the crankshaft is 16 in. in diameter at the bearings and 19 in. at the pins. It weighs over 600,000 lb. and is the largest press of this type ever built by the company.

The press is of tie rod construction in which the working strain is taken by four large steel tie rods



Bliss No. 16 double-crank press

which tie together the bed, crown and uprights. The bed weighs 60 tons, the crown 58 tons and the slide 34 tons. Slide adjustment is made by a 15 hp. motor. Stroke of the slide is 15 in. Distance between uprights is 160 in. Area of slide face is 60 by 148 in.

Cincinnati Giant Hydromatics

IN the development of its new "Giant Hydromatics," exhibited for the first time at the show of the Machine Tool Builders' Association in Cleveland, the Cincinnati Milling Machine Co. drew upon its 17 years' experience in building automatic milling machines.

The general structure of the modern planer was followed, particularly the long bed for supporting the table and the rugged housings for supporting the cutting tool. The type of structure evolved is very flexible, permitting not only of the use of wide beds, but also of the application of multiple spindle units arranged horizontally, vertically, or both.

The housings which carry the spindle driving unit are of box-section and heavily ribbed, to minimize deflec-

tion under cutting stresses. The lower compartment contains the motor on one side and on the other such auxiliary driving units as the friction clutch and the spindle reverse mechanism.

The spindle carrier is a self-contained unit in which the whole gear transmission, including the spindle speed change gears, is mounted. This unit also carries the large quill which provides for lateral adjustment of the cutter. This quill is made of high carbon steel, heat-treated, and is adjusted through a self-locking worm and rack device. It is rigidly clamped in the spindle carrier around its full diameter by one bolt. On top of the spindle carrier is mounted a rectangular overarm of the Cincinnati type for which are claimed great strength, self-aligning qualities and convenient mounting of the overarm brackets when arbors are used.

The table is mounted directly on the bed. Owing to the great chip-producing capacity of the machine, disposal of the chips and storage of the large amount of cutter coolant required presented a problem. This has been taken care of by providing a large accessible chamber underneath the table. That portion of the bed which carries the table is connected with the side walls by cross bridges, and these are spaced far enough apart to allow free passage of the longest chips falling from the table into the bed. A large door at the front end of the machine allows for quick removal of these chips. This bed structure gives opportunity for fitting a very large strainer which allows the coolant to return to its

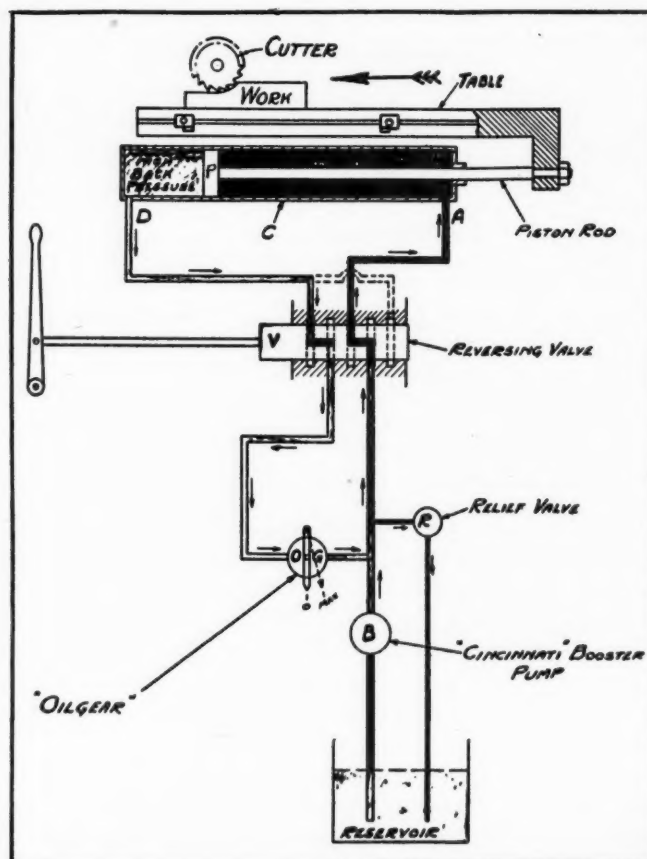


Fig. 1. Diagram of oil circuit for feeding movement

Parts, Accessories and Production Tools

reservoir freely even if it is completely covered by chips, and at the same time it provides simple means for attaching splash guards. The rear end of the bed carries in a separate chamber the self-contained hydromatic feed units with its pump, valves and oil reservoir. The table bearings on the bed are the full width of the table and so long that the overhang in extreme positions never exceeds one-fourth of the table length. Heavy ribbing ensures the maintenance of a flat surface on the table and great resistance against deflection.

At the present time the rates of traverse provided on milling machine tables vary through a wide range. This is due not only to the great variety of materials milled, but also the great variety of diameters and types of cutters used. Consequently, we find many milling machines with a feed range from $\frac{1}{2}$ to 30 in. per min. (i. e., a ratio of 69 to 1).

The requirement of such a wide range of feeds with small steps is difficult to meet, but the hydraulic system embodied in the "Giant Hydromatic" is said to fully meet them. Fig. 1 shows in diagram the arrangement of the elements of the feeding circuit. *C* is a cylinder bolted to the bed and carrying a piston *P* connected to the table by a piston rod. *V* is a reversing valve; *OG* an Oilgear variable-displacement pump, and *B* a small high-pressure booster pump cooperating with the latter to produce a continued forward pressure upon the piston *P* the amount of this pressure being determined by the setting of the relief valve *R*.

The rate of advance depends upon the rate of escape of oil. It is evident that the only avenue of escape for

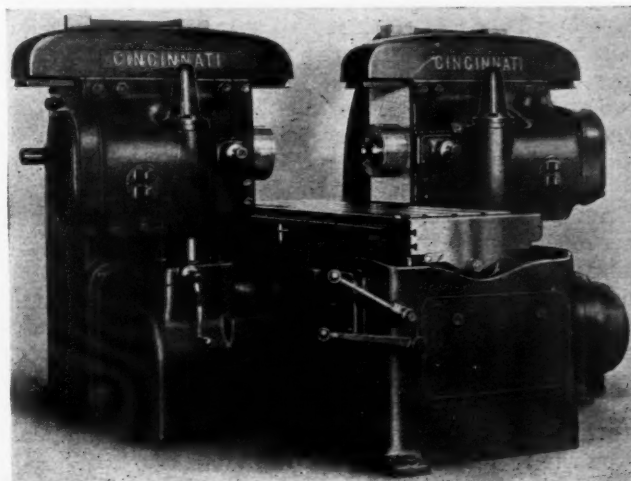


Fig. 3. Cincinnati double spindle Giant Hydromatic

the oil from the rear end of the cylinder is by way of the Pipe *C* through the reversing valve and thence through the Oilgear pump. Consequently, the quantity of oil permitted to escape from the cylinder is definitely fixed by the displacement of the Oilgear pump, which may be varied at will from zero to maximum. A high back pressure is built up to resist the movement of the piston, thus providing a constantly receding restraint.

The circuit described above pertains to a movement of the table at feeding rates only. In order to provide, in addition, a high table speed for rapid approach to the work and rapid return, use is made of an auxiliary, large-volume, low-pressure gear pump. Both circuits are interconnected and operated by a common control or selector valve arranged to provide both a reversal of table movement and a change of speed from feed rate to rapid traverse, or vice versa. This is accomplished by the use of a valve having both reciprocatory and oscillatory motion.

Among the advantages claimed for the use of hydraulic feed in a milling machine are flexibility of feed control, efficiency of metal removal, safety and simplicity.

The drive is through a motor, enclosed in the housing, to a first driveshaft by means of a silent chain which is automatically lubricated. This first shaft carries a multiple disk friction clutch and a set of bevel gears which provide for changing the direction of rotation of the spindle. These members constitute a self-contained unit provided with splash lubrication. One of the bevel gears in the reverse mechanism is used as a driver of the vertical shaft from which, by means of a set of reduction bevel gears, the change gears are driven. These change gears are mounted solidly on the shaft by means of a steep taper, and a locking nut facilitating their removal when speed changes have to be made. The second change gear shaft also carries the back gear pinion from which an exceptionally large face gear is driven.

This entire mechanism is lubricated by means of an oil pump continuously circulating oil over all bearings and gears. All shafts, including the spindles, run on

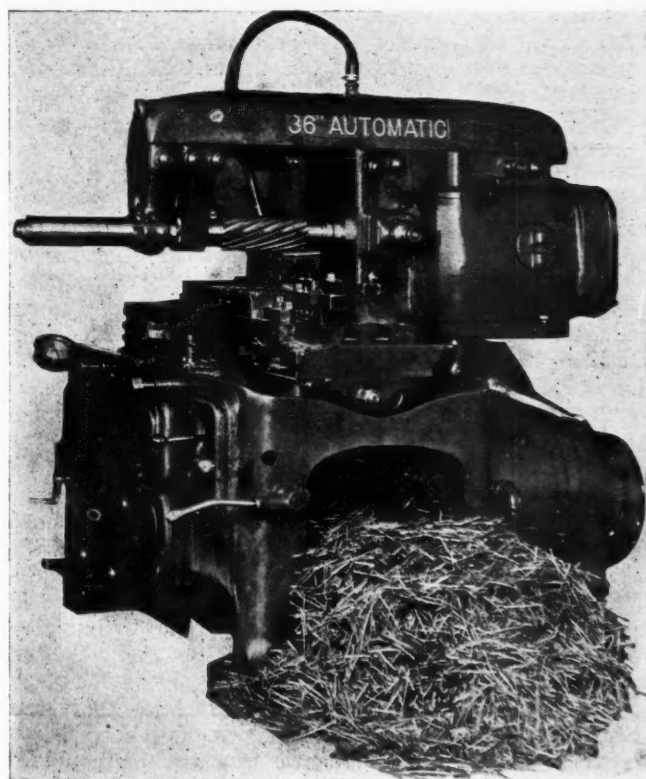


Fig. 2. Cincinnati single spindle Giant Hydromatic showing large chip capacity

Timken roller bearings and the spindle itself has the "Cincinnati four-bearing self-compensating spindle mounting" which provides a very rigid support. There are only four gear contacts in the drive.

All levers for operating the machine are conveniently located. A starting lever operates the friction clutch, and to quickly stop the machine it engages a brake. A second lever controls the feeding mechanism, and has four positions, two positions resulting in power quick traverse in either direction of the table, while the other two positions give a feed to the table in either direction. The position of this lever indicates the direction in which the table is moving. A third lever starts and stops the table movement, whether fast or slow.

A single plunger with oscillatory and reciprocating movement controls the valve of the hydraulic feed mechanism. Dogs, set on the table, operate this plunger, giving to the table the movement desired. Any cycle of milling, either the one-way feeding cycle, with automatic quick return of the table, or the reciprocating cycle, automatically controlled for fast and slow feeding in either direction, can be obtained. Means are also provided so that the spindle can be stopped automatically on the return movement of the table.

Adjustments for setting up the machine, such as rais-

ing and lowering the spindle carrier, and the in-and-out adjustment of the quill, are made from one position. All bolts for loosening and tightening the various elements can be operated with a single wrench in the same position, thus facilitating and speeding adjustments.

The machine can be provided with a flood lubrication system for supplying coolant to the cutter. A centrifugal pump delivering 20 gal. per minute is used.

All running parts, including the table, are automatically oiled and do not need attention more than once a month. Only one place on the machine requires daily oiling.

These Giant Hydromatic milling machines are built as plain and duplex machines in a number of sizes varying in table travel from 36 to 72 in. and in table width from 16 to 24 in. The weights vary from 9500 to 18,000 lb.

THE annual automobile census held in Germany on July 1, last, showed that the country at that time possessed 723,935 motor vehicles of all kinds, an increase of 26 per cent over the preceding year. Private passenger cars and motorcycles both increased by more than 30 per cent, while trucks increased 10 per cent.

Europe Turns to U. S. for Automotive Parts

(Continued from page 819)

duced by Dodge. In our forges, working on the basis of 400 cars a day, we employ 500 hands, compared with 1700 at the Dodge factory for a maximum output of 1500 cars a day. In the steel pressings department our time for both pressings and assembly are comparable with those of the Budd factory at Philadelphia, although we produce only 300 to 400 bodies a day, compared with 3000 to 4000.

"There is an important difference in machining, for our tools are not as modern as those employed in the United States, but by the spring of 1928 the time necessary for all machining operations on an engine will be the same as in the United States."

"Our workers have adapted themselves to these methods without any difficulty. It has often been stated that we had strikes when we sought to adopt the chain assembly line. This is incorrect. We had a strike of sheet metal workers in 1924, and as this happened at the time we were putting our assembly line into operation, it led to the belief that this latter was responsible. Our workers are delighted with these modern methods, which are less tiring, physically and morally, and which are better paid."

Mr. Citroen's comment regarding machine tool equipment is particularly interesting as being indicative of a more or less general trend of thinking among European makers at this time. American machine tool manufacturers are being looked to as the leaders in design to a greater extent today than ever before. The recent machine tool exhibition in Cleveland held by the National Machine Tool Builders Association was viewed by a number of foreign automotive men and impressed vividly upon their minds the remarkable strides which have been made in machine tool development. Foreign visitors who have been through our automotive factories in recent months and recent years have been carrying back home clear conceptions of new possibilities along machine tool and factory equipment

lines for application in their own shops. And gradually those ideas are being put into practice as opportunity arises for plant changes.

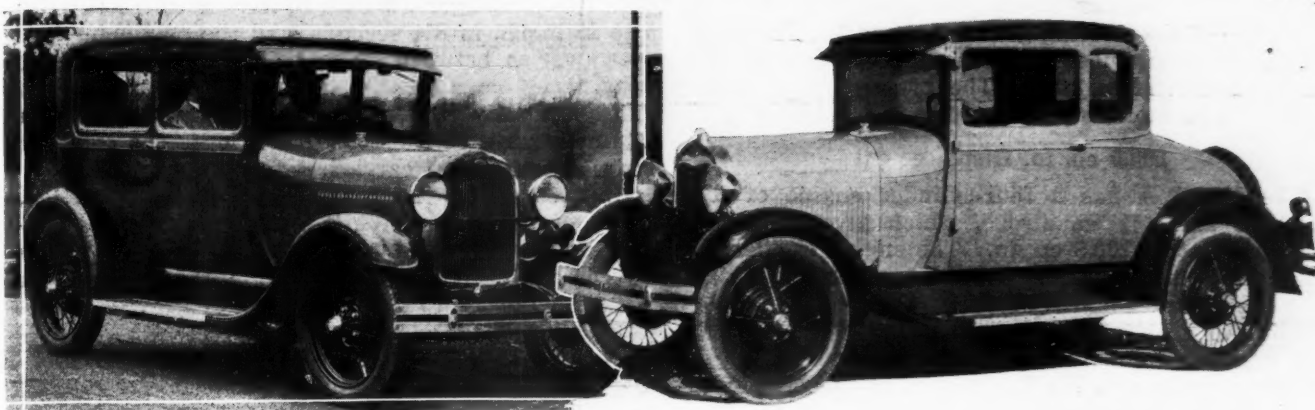
The whole development of recent months from an automotive standpoint indicates a closer commercial relationship between various supply sources of our domestic and of foreign automotive manufacturers. The probable future of these trends seems to be well summarized in a statement made the other day by J. G. Geddes, vice-president of the Union Trust Co., Cleveland, Ohio, who returned a few weeks ago from a European tour. He said, among other things:

"European countries are making marked progress toward industrial and financial stability, but this fact carries no serious threat of destructive competition for American business. It is interesting to note that there is an impressive tendency abroad toward adoption of American mass production principles. This is particularly true of Germany, and to a lesser extent of France and England. Powerful syndicates or combines also are being formed in Europe for the purpose of exploiting world markets.

"But none of these developments need to alarm American producers. We are many leaps ahead of Europe in the art of cheap unit production costs through mass output. Moreover, all these manifestations of activity mean the dawning of prosperity for immense populations in Europe, which have known nothing but great poverty and distress in recent years. As production expands abroad, employment will increase and wages will tend to rise. It logically follows that consumption will mount and that broader markets will develop for everyone.

"When one observes how few automobiles there are abroad, relative to those in America, and how scarce are the luxuries and conveniences that are commonplace here, it is difficult to doubt that vast untouched markets lie right at the door of European industry. In addition they beckon America."

Model "A" Tudor Sedan and the Coupe



Ford Prices \$385 to \$570

Tudor sedan at \$495 same as corresponding Model T. Export Model AF announced. Truck range is \$460-\$610

WITH simultaneous displays in 36 major centers of the United States, Canada and Europe, and the announcement of prices, the new Ford Model A this week was formally presented to the public. As the mechanical details were fairly widely known, the prices naturally took precedence in interest. They follow:

	Model A	Model T
Tudor sedan	\$495	\$495
Fordor sedan	570	545
Roadster	385	350
Sport coupe	550	...
Coupe	495	485
Roadster with pickup body	395	381
Chassis	325	300
Truck chassis	460	375
Truck chassis with cab	545	460
Truck chassis with cab and stake body	610	525
Truck chassis with cab and platform body	595	525

An export Model AF will be manufactured in England for the British market and in Canada along with the Model A. The export model is identical with Model A except that the bore is 3 1/16 in. and rear axle ratio 4.66:1, and right hand drive is used. In most export markets the regular model will be sold.

A host of rumors were, in part, laid to rest when an official statement was issued at Detroit to the effect that the Ford Motor Co. has not entered into any new agreements with dealers for the distribution of the new cars. Policies concerning equipment and parts, furthermore, remain unchanged.

Night and day the gigantic Ford organization is girding itself for production in large quantities. Only one final assembly line at Fordson is now in operation, but others will soon be added, not only at the main plant but at 32 branch assembly plants in the United States, Canada and overseas.

Rating of the new Ford truck is 1 1/2 tons with single rear wheels and 2 1/2 with dual rear wheels, both wire. The frame is designed to carry loads in excess of 2 1/2 tons, including body.

Additional technical data on the Model A follow:

Compression is carried at 80 lb. p. sq. in. gage. Camshaft drive is through a bakelized fabric gear on the camshaft with helical teeth. Camshaft bearings are of 1 9/16 in. diameter, the lengths of the bearings being 1 3/4, 7/8, 2, 7/8 and 1 in. (front to back). The valves are made of chrome-nickel alloy, the stem diameter being 5/16 in. and the guides being removable. Mushroom type tappets are used and a clearance of 0.015 in. is provided. The valve spring pressure is 36 lb. when the valves are closed. The valve lift is 0.287 in.

All crankshaft main bearings are made of babbitt, the upper halves being iron-backed and the lower halves steel-backed; they are 1 5/8 in. in diameter, the lengths being (front to rear) 2, 2, and 3 1/8 in. Thrust is taken on the rear bearing. Connecting rods are made of + section; they have a center-to-center length of 7 1/2 in. and weigh 22 oz. each. The crankpin diameter is 1 1/2 in. and its length, 1 5/8 in. The piston pin, which is of the floating type, is of 1 in. diameter. It has no bushing in the rod and is held against endwise motion by spring clips. The weight of the piston is 17 7/8 oz. The length of the piston is 3 29/32 in.

The carburetor is a Ford-Zenith of 1 in. size. The fuel tank has a capacity of 10 gal. and a fuel filter of Ford make is fitted. Manual spark control is used, 20 deg. of advance being allowed for. The firing order is 1-2-4-3. The storage battery is of Ford make and has a capacity of 80 ampere-hrs., being of the six-volt type. Head lamp lenses have a diameter of 8 1/2 in. The horn is of the motor type.

The car has a wheelbase of 103 1/2 in. and a tread of 56 in. The rear axle reduction is 3.7 to 1. The minimum road clearance is 9 1/2 in. The center section of the front axle is made of chromium steel. Brake diameters are 11 in. all around and the length of the

lining is 14 in. per wheel, the width of the lining being $1\frac{1}{2}$ in., and the thickness $\frac{3}{16}$ in. The total braking area is 168 sq. in.

The housing of the steering gear is of forged steel and has the tubular steering column welded to it. The ratio of the steering gear is $11\frac{1}{4}$ to 1. The front spring is $1\frac{3}{4}$ in. wide; the rear, $2\frac{1}{4}$. All springs are made of chromium steel. The pressed steel frame is of $\frac{5}{32}$ in. stock, and the section is 4 in. deep.

200.5 cu. in. Displacement

The Model A has a four-cylinder engine of $3\frac{7}{8}$ in. bore and $4\frac{1}{4}$ in. stroke, which gives a piston displacement of 200.5 cu. in. The engine is oiled by the circulating splash system, the pump delivering into the valve chamber, from which the oil flows by gravity to each of the main bearings. Connecting rod heads are provided with dippers which splash oil from troughs in the lower part of the crankcase to all of the other parts of the engine requiring lubrication. The transmission, which is of the regular sliding pinion type, has gears made of chrome steel.

Drive to the rear axle is by an inclosed propeller shaft with ball-joint at the forward end, to the propeller-shaft-tube member of which the diagonal radius rods from the rear axle housing are secured. The rear axle is of three-quarter floating type. Both the generator and the starting motor are located on the left side of the engine (looked at from the rear), the former being driven by the V-type fan belt, while the latter drives to the flywheel.

These facts concerning the new car serve to amplify the description given last week in *Automotive Industries*. The accuracy and completeness of that description is confirmed by the following official information:

A choice of four colors is being offered, namely, Niagara blue, Arabian sand, Dawn gray, and Gun-metal blue. The belt and reveals are in all cases in contrasting colors and the bodies are attractively striped. All cars are finished in pyroxylin lacquer. The fenders are of the full-crowned type and harmonize with the body lines.

Seat cushions are deeper and softer than those of the Model T. Door handles and window lifts are nickel-plated. The speedometer, gasoline gage, ammeter and ignition lock are mounted on an instrument panel of satin-finish nickel and are illuminated by a lamp mounted in the center. The headlamps and radiator shell are nickel-plated on all exposed surfaces. The closed cars have the cadet type of sun visor and a crown roof.

Unusually narrow front pillars, together with steel body construction, assure clear vision without impairing body strength.

As will be seen in the mechanical descriptions to follow, the car should be quiet. The body design works to that end, and the very flexible spring construction, working in conjunction with hydraulic shock absorbers, minimizes road shocks, thus lessening body noises. Care has been exercised in the design of the bodies to prevent squeaks, rattles and drumming sound. Wherever there is a possibility of squeaks being produced, the body panels and frame sections are welded and riveted together.

The body styles include sport coupe, coupe, roadster, phaeton, Tudor sedan and Fordor sedan. In addition a truck model is being offered.

Together with comfort, strength and silence, the

amount of room found in these cars is being stressed. Second, possibly, to appearance and comfort, automobiles today are being sold on performance. In tests in high gear, a Model A with a two-door sedan body, with two passengers, is said to have accelerated from 5 to 25 m.p.h. in $8\frac{1}{2}$ seconds, and the maximum road speed varies between 55 and 65 m.p.h. Some road tests have shown a speed in excess of 65 m.p.h., but, quite naturally, the maximum speed which can be attained varies with road conditions, the style of body and the load carried.

At 2200 r.p.m. the four-cylinder engine develops 40 hp. on the brake. While the rate of gasoline consumption will vary widely with service conditions, the car will make between 20 and 30 miles per gallon.

Gasoline is fed to the carburetor by gravity from a welded, one-piece steel tank which is integral with the cowl. The smooth operation and unusual accelerating qualities of the car are due, to a great extent, to the use of aluminum pistons. A three-bearing crankshaft is used, which is provided with circular disks concentric with the shaft in the places of the usual short arms. This shaft is statically and dynamically balanced, and as a result of the relatively low speed at which the full power is developed, the engine runs with exceptional smoothness. Cam contour and valve clearances have been so worked out that—with non-metallic timing gears—an unusually quiet powerplant results.

Engine lubrication is unique and of distinctive Ford design. The system involves pump circulation, gravity feed and splash. Oil from the pump is delivered to the valve chamber, from which it flows by gravity to the main bearings of the crankshaft. There is an oil dipper on the cap of each connecting rod, which splashes the oil over the bearings and distributes it to all interior parts of the engine.

Water Circulation

The cooling water is positively circulated by means of a centrifugal pump operated from the fan belt. The fan is mounted at the forward end of the pump shaft and is of the propeller type.

The ignition system is of conventional modern design, the time-honored four coils and timer of the old Model T being done away with. One ignition coil is used, and this is inclosed in a waterproof case. The distributor is located on the top of the engine, thus making it readily accessible and protecting it from oil and moisture. Connections from the distributor to the plugs are made by short bronze springs. A coincidental lock is placed in the ignition circuit. This not only replaces the regular ignition switch, but in the "off" position it grounds the entire circuit. A steel conduit leading from the switch to the distributor protects the primary wire. This wire is grounded to the distributor casing, thereby making it impossible for anyone to wire around the device.

The car has a three-speed-and-reverse selective sliding gear transmission with standard gear shift. The main shaft runs on ball bearings, while the gear cluster on the stationary secondary shaft is mounted on roller bearings, only the reverse idler having a plain bearing. This construction will at once be recognized as unusual in the lower-priced class. All gears are made of heat-treated chromium steel. In conjunction with this transmission, use is made of a multiple-disk dry clutch, with four driving and five driven disks.

Another radical departure from the Model T is the

new irreversible steering gear. The steering wheel is of large diameter and is made entirely of steel, covered with hard rubber. The lighting switch and horn button are conveniently located on top of the wheel.

Of interesting design are the mechanical four-wheel brakes. These are of the internal, two-shoe type and are self-centering. Smooth action and ease of adjustment are assured. All adjustments are made from outside, without removing any parts and without special tools. Both the brake pedal and the lever operate all four brakes. The total braking surface is 168 sq. in. In order to assure continued service and easy adjustment, all brake working parts are cadmium-plated, thus making them rust-proof.

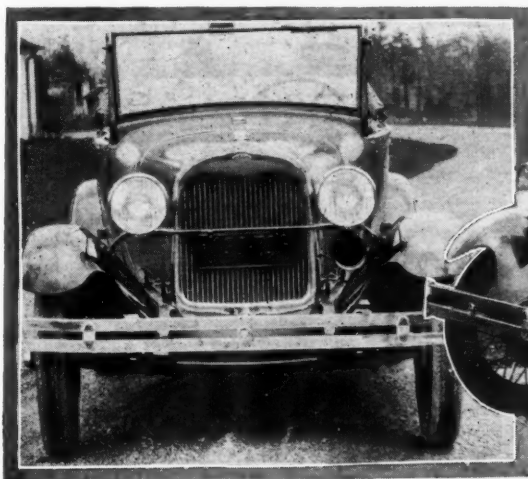
A three-quarter floating rear axle is employed, and the axle shafts carry none of the weight of the car. The axle housings are made entirely of steel and are built up by welding steel forgings to steel tubing. The differential housing, to which these axle housings are bolted, is made of rolled channel steel. The wheels are carried on roller bearings on the axle housing, hence the shafts are not called upon to carry the weight of the car. All bearings in the rear axle are of the roller type, and the drive is by spiral bevel gears. The wheels, which are commonly referred to as wire wheels, are really steel spoked wheels. Each

wheel is assembled by welding and becomes one-piece of metal. This prevents the spokes from coming loose, and each spoke has a tensile strength of 4000 lb. As the outside spokes do not cross, and as there are only 30 spokes in each wheel, the wheels are particularly easy to clean.

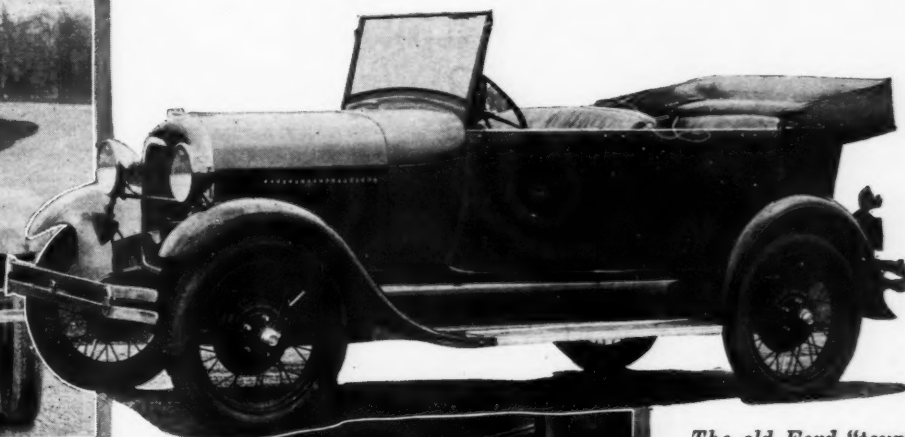
As formerly, the springs are of the transverse semi-elliptic type. They are built of fine spring steel and the leaves are unusually wide and very thin. Each spring is built up of varying sizes and numbers of leaves to give proper flexibility for the particular body style for which the chassis is designed. The action of the hydraulic shock absorbers is adjustable and controls both up and down motion, thus resulting not only in greater comfort to passengers, but also making the car safer. Torque tube drive, which takes up all strain of starting and stopping the car, leaves the rear springs free to perform their sole function—that of carrying the car and passengers.

The lubrication of the chassis is by means of a grease gun and special fittings. The equipment on these cars, in addition to the customary items such as starter and generator, ammeter and tool kit, includes the following: Spare wheel, windshield wiper, speedometer, gasoline gage, dash-light, rear-view mirror, rear and stoplight, oil gage, and the Electrolock-type of ignition lock.

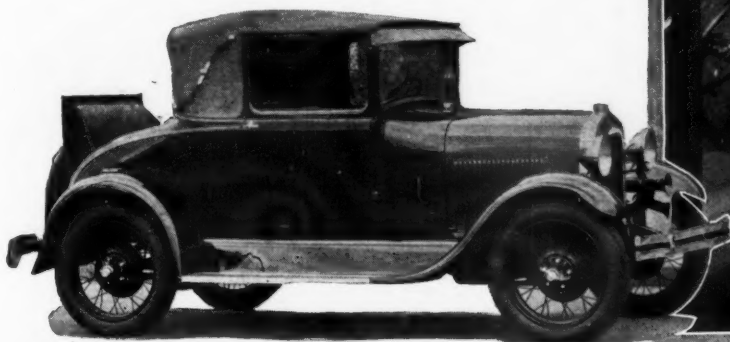
Additional Exterior and Interior Views of the Model "A"



Front view of the Model A, showing the new radiator design



The old Ford "touring car" is no more. The "phaeton," shown above, has taken its place

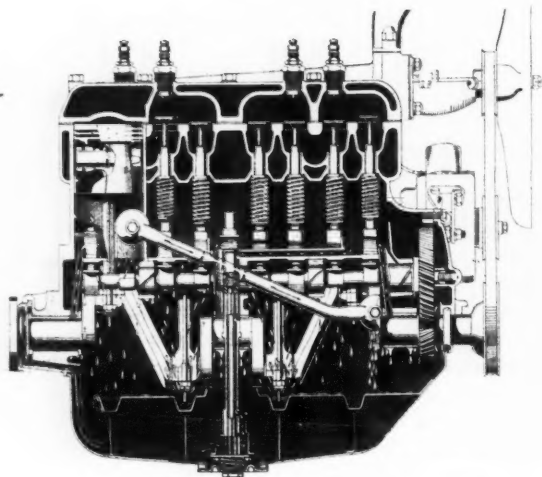


One of the most attractive cars in the new line is this four-passenger sport coupe

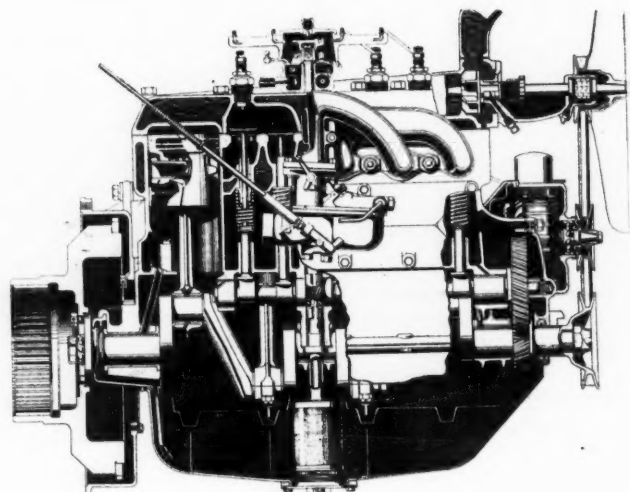


The interior view at the left shows the arrangement of the controls and the design of the instrument panel, which includes a gasoline gage

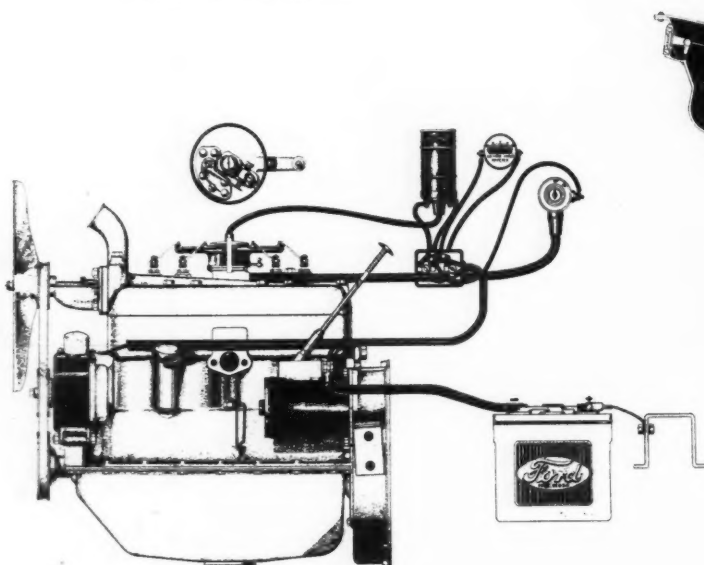
Mechanical Details of the



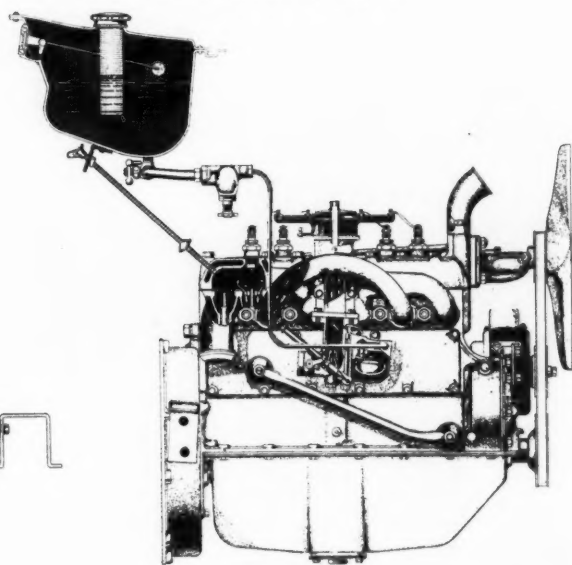
Engine oiling system



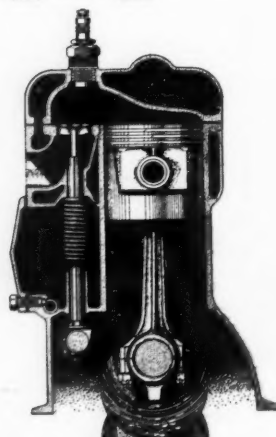
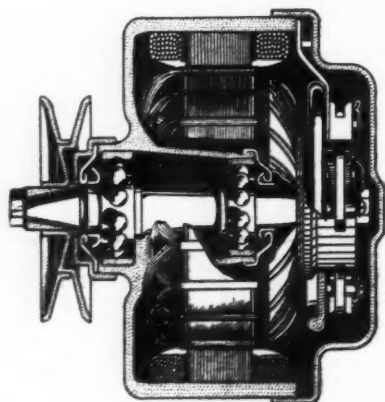
Longitudinal section of engine



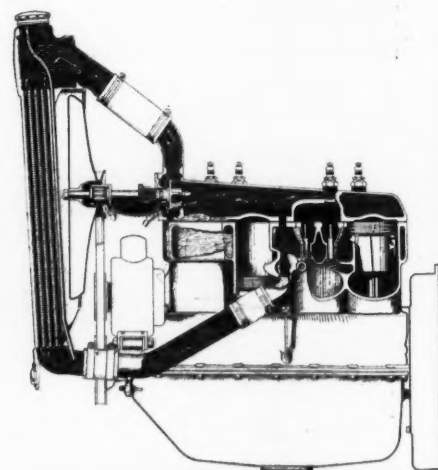
Wiring diagram



Fuel system



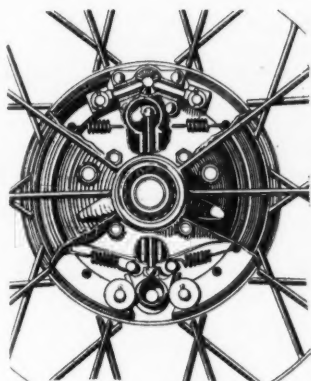
*(Above) camshaft; (on left) section of generator;
(on right) cross section through cylinder*



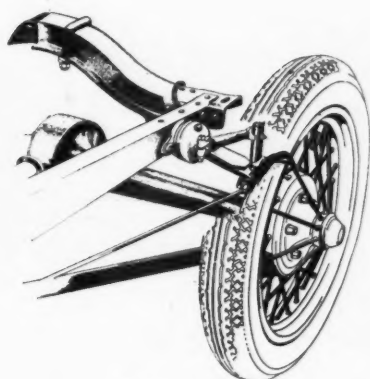
*Cooling system, showing pump
mounted on fan shaft*

of

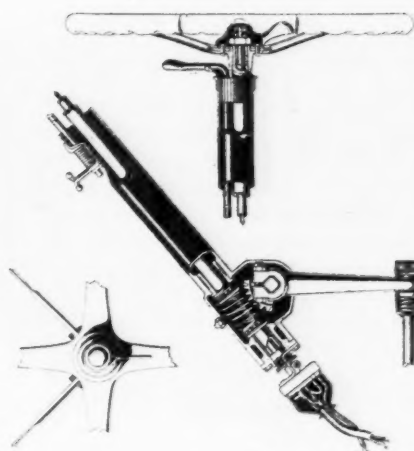
the Ford Model "A"



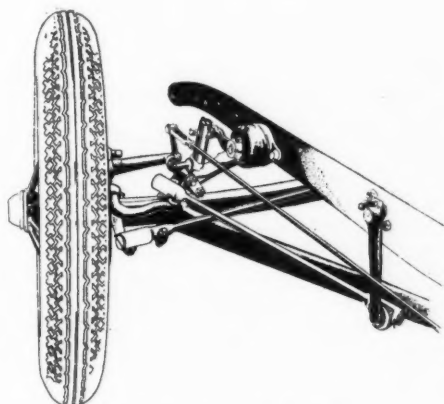
Brake mechanism



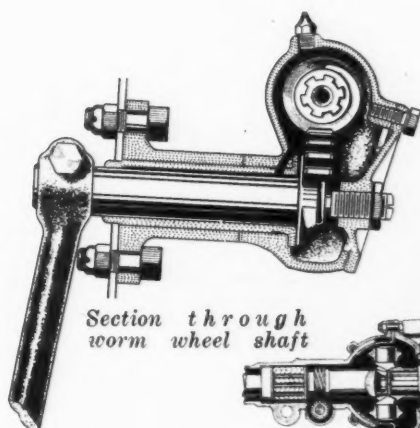
Rear corner of chassis



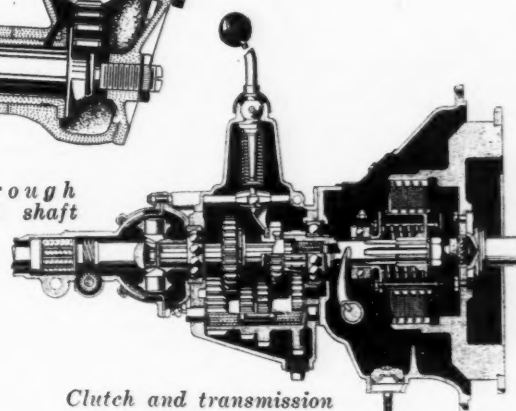
Steering gear detail



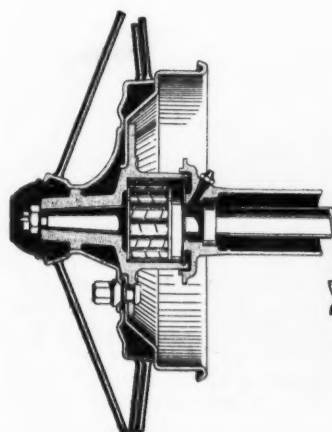
Front corner of chassis



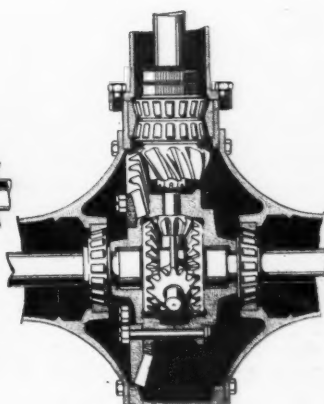
Section through
worm wheel shaft



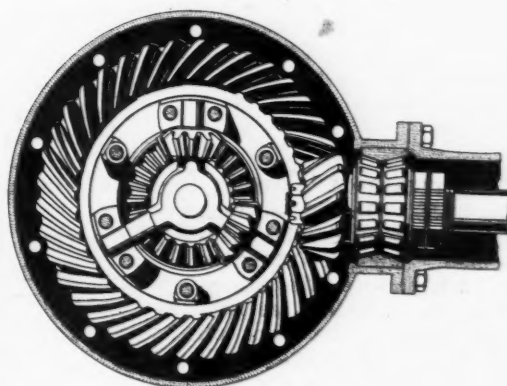
Clutch and transmission



Rear axle end



Rear axle center



Spiral bevel drive gears

AUTOMOTIVE **NEWS SECTION** INDUSTRIES

Philadelphia, Pennsylvania

December 3, 1927

Retail Sales Show Decline Pending New Ford Display

PHILADELPHIA, Dec. 3—Automobile sales have been light, well below the seasonal level, for several weeks, and this situation is, of course, aggravated by the Ford announcement that the new car is about to be shown to the public. The lack of production in several important low priced lines, because of changeovers and inventory taking, has made available for the market fewer cars and dealers are mainly concerned with reduction of stocks in both new and used cars.

On a territorial basis the sales situation is somewhat variable. Confirming earlier expectations of better business in the rural communities, the best markets currently appear to be in the grain sections of the Middle West and the cotton regions of the Southeast. Sales have been disappointing in the Southwest and on the Pacific Coast while generally speaking the manufacturing regions of the East have not been good markets for new cars. In New England recent flood conditions cause an additional deterrent to buying.

Used cars stocks are rather heavy in most parts of the country, and are apparently above the level of a year ago. Prices obtainable for these cars are most unsatisfactory but sales in units have been fair, due to the fact, probably, that the imminence of the new Ford does not influence so strongly the purchasers of used cars.

New car stocks are normally somewhat above the average at this time of
(Continued on page 850)

F. B. Stearns Organizes New Sales Corporation

CLEVELAND, Dec. 1—Stearns-Knight Sales Corp. has been formed here by the F. B. Stearns Co. to take over the sales, servicing and advertising of Stearns-Knight cars. John N. Willys is chairman of the board of directors of the new company, and H. J. Leonard, president of Stearns, is president. L. E. Corcoran is general sales manager.

Marmon Promotes Tainsh

INDIANAPOLIS, Dec. 1—John Tainsh has been appointed sales manager of Marmon Motor Car Co. as the first step of an important sales expansion program. H. H. Brooks, as general sales director, will control all branches and W. T. Young, Jr., will continue as assistant sales director.

Hurlburt Joins Stearns

NEW YORK, Dec. 1—W. B. Hurlburt has been appointed manager of the New York branch of the Stearns-Knight Sales Corp.

Factory Executives Study Pooling Plan

CLEVELAND, Dec. 1—Pooling of interests of several car and equipment manufacturers is the subject of conferences under way here and in Detroit, according to rumors which persist despite denials from several sources. R. W. Judson, president, Continental Motors Corp., made it plain that his company was not considering entry into any consolidation in the following statement:

"Continental Motors Corp. is not considering and does not intend to consider any proposed consolidation or merger with any other automobile or parts manufacturers and further that no conferences have been held with any one with such an idea in mind. We expect to maintain our position indefinitely as an independent motor manufacturer serving our numerous customers in the different fields where gasoline power is required."

Other principals in the reported conferences, including Edward S. Jordan, Jordan Motor Car Co., and Edward VerLinden, Peerless Motor Car Corp., could not be reached for statements. A Detroit car manufacturer and a prominent body manufacturer have also been mentioned, as well as a fourth car manufacturer of the Middle West.

Even if no merger could be effected, it is declared in trade circles, the companies involved could cooperate advantageously in many ways.

Sanction British Merger

NEW YORK, Nov. 28—Stockholders of the Armstrong, Whitworth Co. have approved the plan for a merger with Vickers, Ltd., according to reports received here today from London. The new company will be capitalized at £21,000,000, or about \$105,000,000, and will be known as Vickers, Armstrong, Ltd. Armstrong stockholders will receive £4,500,000 for fixed assets, £600,000 cash for certain floating assets, and about £1,000,000 for other assets.

November Production Estimated at 125,300

NEW YORK, Nov. 30—Estimated output of cars and trucks of members of the National Automobile Chamber of Commerce for the month of November is 125,300 as compared with 229,725 for October, thus showing a decline of 45 per cent during November. This compares with a member output in November, 1926, of 165,198, and an output for the entire industry in that month of 260,778.

Member output for the first 11 months of the current year is estimated at 2,956,049, an advance of 8 per cent over last year. Output of the entire industry for the first 11 months is thus placed at 3,375,231.

Ford Contracts Bring Upturn in Stock Prices

NEW YORK, Dec. 1—Contracts which will total several hundred millions of dollars for parts and materials for the new Ford car have now been placed with an extensive list of leading parts makers. As a result of the contracts, stocks of the companies sharing them were in active demand on the stock market this week and in most cases advanced sharply. Midland Steel rose 25 points on Tuesday.

In addition to the rubber companies in the Akron district, companies which are reported to have important orders include Timken Roller Bearing Co., Midland Steel Products, Stewart-Warner, Briggs Mfg. Co. and American Bosch Magneto and Zenith. The Timken contract is expected to reach \$28,000,000 in 1928. Other orders are said to have been placed with National Acme, the Glidden Co. and Cleveland Hardware Co.

Nash and Graham Elected

NEW YORK, Dec. 1—Charles W. Nash, president of Nash Motors Co., and R. C. Graham, vice-president of Paige-Detroit Motor Car Co., were elected directors of the National Automobile Chamber of Commerce today to take the places of George M. Graham and H. M. Jewett. Directors voted to conduct an educational campaign to bring about the final and complete repeal of the Federal excise tax on automobiles. The chamber also voted to support the recommendation of the U. S. Chamber of Commerce for Federal control of Mississippi flood action.

Edsel Ford in Interview Outlines Model A Policies

Output of 1000 Daily to be Increased to Peak Production
by Summer—Financing of Dealer Sales Given
Consideration—Has 8500 Dealers

DETROIT, Nov. 30—It is very doubtful if any of the new Ford cars will be available for delivery to purchasers before the first of the year, Edsel Ford, president of Ford Motor Co., said in an interview today. During the conversation Mr. Ford outlined some of the company's future production plans and sales policies and also set at rest some of the wild stories which have been in circulation about Ford Motor Co.

It will still take months before the Ford factories are in readiness to turn out the Model A on anything like a near peak production schedule. The company, he said, has shipped about 550 cars to date. These will be used in the displays which will be opened to the public on Friday. Production of cars is still very limited but as fast as cars are produced they will be shipped to dealers.

"In January we expect to be manufacturing about 1000 cars a day," he said. "It is our plan to increase the output 1000 cars a day each month until peak output is reached."

Asked if peak output meant 8000 to 10,000 Fords a day, Mr. Ford smiled and replied "that remains to be seen."

The Ford company, he said, is buying certain parts and materials for the car from outside sources. The shock absorbers come from Houdaille, speedometers from Stewart-Warner and the non-shatterable glass from Triplex. Evidently the company plans to manufacture at least a part of its requirements of these various items such as the shock absorbers and glass. Coupe bodies are being provided by Briggs. This company and Budd are filling stamping orders, he said, though Ford will continue to manufacture a large part of its bodies once the plants are fully organized.

No New Time Sales Plans

Is there any foundation to the story that Ford plans to sell the new cars on a basis of \$150 down and \$12 a month, he was asked. The question involved one of the most important of the large flock of Ford rumors which have been in circulation. Mr. Ford's eyes twinkled. "I don't know where that story started. We have no knowledge of its origin and know nothing about it only what we have read."

The question of how Ford car sales would be financed was brought up and he was asked if the Ford company would handle its own financing. His reply was that financing arrangements



Edsel Ford

which existed for the Model T will still remain in force. He said that Ford Motor Co. has been considering the advisability of handling its own financing for Ford dealers but such an idea, he declared, is still in a formative state. He indicated that such action is still some distance away.

Continue General Parts Sale

As to the policy on the sale of replacement parts to independent garages, he replied that the practice formerly maintained will be continued. "We sell the parts to our dealers at 40 per cent discount and they in turn make them available to the independent service station at 25 per cent discount," said Mr. Ford.

Speaking of dealer conditions, Mr. Ford said:

"Strange as it may seem our dealer turnover has been less during the present year than it was last year or the year before that. Our average turnover in dealers is about 10 per cent a year but it has been less than that in 1927. Our dealers, we find, are not so bad off as some think they are. They have found new ways to make money and they have a much better set-up. They have cleaned out stocks. Everybody looks for a good clean business with a great many cash deals in sight."

He said the company would not put on a drive to line up new dealers. The company has 8500 dealers and also has on file a large number of applications for franchises.

Business in Brief

Written exclusively for **AUTOMOTIVE INDUSTRIES** by the **Guaranty Trust Co.**

NEW YORK, Dec. 1—Trade conditions have failed to respond to the normal holiday increase of business in consequence of the retarding influence of warm weather upon retail sales. Brokers' security loans rose to a new high record last week while sterling also reached a new peak for the year. Cotton prices have declined to the lowest level this season, while the price of corn during the past week has been stronger. Call money has become firmer.

FREIGHT CAR LOADINGS

Railroad freight car loadings in the week ended Nov. 12 again declined, numbering 974,862, as compared with 1,038,852 in the previous week and 1,106,889 in the corresponding period a year ago. Total loadings so far this year amount to 46,473,139 cars, as against 47,340,437 cars in the same period last year and 45,542,689 cars two years ago.

PETROLEUM OUTPUT

Production of crude petroleum rose during the week ended Nov. 19, average daily output for that period being 2,466,950 bbl., which compares with 2,469,500 bbl. a week earlier and 2,370,450 bbl. in the corresponding period a year ago.

FISHER'S INDEX

Professor Fisher's index of wholesale commodity prices rose fractionally to 146.1 last week, as against 145.9 in the previous week, and 145 four weeks earlier.

BANK DEBITS

Bank debits to individual accounts, as reported to the Federal Reserve Board for the week ended Nov. 23, were 4.9 per cent below the total of the preceding week and 22.3 per cent greater than the amount reported in the corresponding period of 1926.

FEDERAL RESERVE REPORT

For the same period the Federal Reserve banks reported that discounts rose \$50,900,000 and note circulation \$22,300,000. Reserves declined \$34,000,000, open market purchases \$7,100,000, U. S. Government securities \$33,600,000 and deposits \$130,200,000. Member banks reported that loans and discounts rose \$173,000, investments \$19,742,000, and borrowings from the Federal Reserve banks \$41,513,000. Net demand deposits decreased \$35,923,000.

Time money and commercial paper rates declined fractionally last week to 3% to 4% and 3% to 4% per cent, respectively.

Stutz to Race in April

INDIANAPOLIS, Nov. 30—The 24-hour stock car race between a Stutz and an Hispano-Suiza for a side-bet of \$25,000 has been postponed until April 16, owing to inability to get the Hispano-Suiza entry ready to race before winter weather.

Buick to Continue on Regular Output

Only Closing During Winter
Will be for Inventory in
Holiday Week

FLINT, Nov. 26—Buick Motor Co. will maintain continuous production throughout the winter months, according to E. T. Strong, president. The statement was issued upon Mr. Strong's return from the East where he has been in conference with General Motors executives for the past 10 days.

"During the Christmas holidays we shall take our annual inventory which will require about two weeks. This is something, however, which is beyond our control, but aside from the closing at that time which is required in order that we make an accounting, continuous production is in sight for the balance of the winter," said Mr. Strong.

"I want the public in Flint to know that the outlook for automobile business and other lines appears bright. This I verified during a visit of 10 days in New York and other eastern points where I met distributors from all parts of the United States. From all I received the same story of increasing prosperity and nothing but optimistic reports and a demand for greater Buick production. This means that we shall go ahead without any shut-downs or lay-offs in Flint except the brief inventory period which I have mentioned.

"This information about employment concerns only those in our employ and is not intended to furnish encouragement for outsiders to come to Flint."

Gardner 75 Models Now \$1,195 to \$1,595

ST. LOUIS, Nov. 28—Gardner Motor Co. has revised prices on its 75 line, the roadster now being priced at \$1,195, standard Victoria at \$1,295, standard sport coupe at \$1,295, standard club sedan at \$1,495, and a de luxe sedan at \$1,595. These represent decreases of \$100 in the de luxe sedan, the standard club sedan, both coupe models and the roadster.

De luxe equipment includes gasoline gage, snubbers, bumpers front and rear, automatic chassis lubrication, air cleaner, gasoline strainer, oil filter, six-inch balloon tires, radiator insignia, engine heat indicator and genuine full walnut steering wheel.

Standard equipment on the 75 includes clear vision ventilating windshield, mohair upholstery, walnut garnish moldings, snubbers on front, bumpers on front, thermostatic heat control, vibration dampener, double filament headlights, rear vision mirror, stop light, automatic windshield wiper, remote control door locks, Butler silver finish hardware, nickel radiator, ignition lock, and Fedco serial numbers.

Hudson River Boats to Carry 300 Cars

NEW YORK, Nov. 28—Two Diesel-drive vessels for the transportation of automobiles and trucks between Albany and New York are to be built by the Hudson River Night Line. These vessels are to be 300 ft. long, 50 ft. wide and will have a capacity of about 300 cars. It is planned to expedite the handling of freight by having several trailers hauled on and off the new vessels by small tractors so that it will not be necessary for large shippers to send trucks all the way through. This service is expected to afford considerable relief from traffic congestion on the highways between New York and Albany.

Chevrolet Locates Detroit Sales Zone

DETROIT, Nov. 28—Chevrolet Motor Co. has established in Detroit its forty-fourth sales zone. The new zone becomes operative Dec. 1 and will be under the direction of A. H. Goodman, present Detroit city sales manager.

Mr. Goodman's place as Detroit city sales manager will be taken by J. D. McLeod, at present sales promotion manager of the Flint sales region. Until six months ago Mr. McLeod was associated with Mr. Goodman as Detroit city representative.

The Detroit zone will be the tenth established this year. It will comprise 66 direct and 47 associate dealers. It is expected that it will be one of the largest and most important in the country, with an annual volume turnover approximating \$25,000,000. Comprising the new zone will be Wayne, Oakland, Washtenaw, Monroe, Macomb and Lenawee counties, in Michigan, which were formerly a part of the Flint zone, besides 12 counties in northern Ohio, including Toledo and extending as far south as Lima.

Saginaw Products Unit is Taken by Chevrolet

DETROIT, Nov. 30—Chevrolet Motor Co. has taken over the gray iron foundry of the Saginaw Products division of General Motors Corp., at Saginaw, it was announced today by W. S. Knudson, president. The plant adds a \$4,500,000 institution to the company's rapidly developing manufacturing operations. After Dec. 1, the Saginaw foundry will be used exclusively for pouring Chevrolet castings. A new conveyor system and other labor saving devices recently installed, give the plant a melting capacity of 800 tons of metal daily.

Goodyear Completes New British Plant

Operations Will Start Dec. 15,
and Increase to 2000
Units Daily

AKRON, Nov. 26—The new Goodyear Tire & Rubber Co. branch factory at Wolverhampton, England, will be completed and ready for operation by Dec. 15, it is announced by C. C. Slusser, factory manager at Akron. The first tire will be turned out on that date.

Completion of the English unit gives Goodyear six factories. There are three plants in the United States, two in Akron and one in Los Angeles, one in Canada, one in Australia, and the new one in England.

The Wolverhampton factory will be put into full production of 2000 tires a day as soon as possible after Dec. 15, according to Mr. Slusser. Skilled workmen from the Akron plants will assist in the initial operation.

Opening of the British factory follows closely that of the Goodyear factory at Sidney, Australia, where the first tire was produced in October. The Sidney unit is making 300 a day, and will be in full production of 1000 tires a day by April 1, 1928, it is stated.

Ground was broken for the Wolverhampton factory on July 25. Charles P. Skinner, Goodyear representative in England for several years, is managing director of the unit. T. A. Linnane, of Akron, is superintendent.

Breeze Corporations, Inc., Buys Mayo Equipment

NEWARK, N. J., Nov. 28—Announcement of the purchase of the business, patents and good will of the Mayo Equipment Co., Dayton, Ohio, by Breeze Corporations, Inc., Newark, N. J., has been made by J. J. Mascuch, president of the latter company. The Mayo line of garage equipment, including wrecking cranes, wheel pullers, brake-lining machines, piston aligners, presses, tire changers, jacks, etc., was formerly distributed nationally by David Lupton's Sons.

The Mayo products will hereafter be sold under the Breeze mark. The company is inaugurating a new program which will place a specially-trained Breeze sales and service engineer in every territory. The Mayo Company was owned by John C. Mayo, banker, of Ashland, Ky., who will continue as a director.

Yellow Rushes New Plant

PONTIAC, Nov. 26—Work is progressing well on the Yellow Truck & Coach Mfg. Co. plant and work is now being rushed on underground work to have it completed before severe winter weather sets in. The main building has been enclosed and work is now going forward in installing conveyors.

Exports, Imports and Reimports of the Automotive Industry for October of Current Year and Total for Ten Months Ending October, 1927

	Month of October 1926		Month of October 1927		Ten Months Ending October 1926		Ten Months Ending October 1927	
	Number	Value	Number	Value	Number	Value	Number	Value
Automobiles, parts and accessories.....	..	\$22,462,758	..	\$28,037,185	..	\$268,289,110	..	\$330,910,287
Electric trucks and passenger cars	28	25,553	23	29,555	91	129,062	109	193,965
Motor trucks and buses (total).....	4,038	3,034,330	8,352	5,946,883	55,606	39,293,707	88,312	57,821,783
Up to 1 ton, inclusive.....	2,963	1,387,723	6,440	3,180,800	43,691	20,409,399	71,956	33,736,312
Over 1 and up to 2½ tons.....	905	1,090,824	1,759	2,305,643	10,042	13,092,943	14,373	18,285,671
Over 2½ tons.....	170	555,783	153	460,440	1,873	5,791,365	1,873	5,799,800
PASSENGER CARS								
Passenger cars, except electric (total).....	16,435	12,932,966	19,366	14,828,903	195,114	145,366,073	240,873	177,255,603
Value up to \$500, inclusive.....	6,514	2,637,755	4,587	1,676,953	79,557	30,597,703	56,552	21,015,189
Value over \$500 up to \$800.....	4,296	3,049,505	5,088	2,809,327	55,704	38,137,969	80,488	44,801,291
Value over \$800 up to \$1,200.....	4,370	4,720,148	6,403	5,241,325	46,573	49,170,903	69,267	59,487,659
Value over \$1,200 up to \$2,000.....	747	1,173,169	2,474	3,086,777	9,605	14,749,469	26,947	33,645,632
Value over \$2,000.....	508	1,352,389	816	2,014,521	4,675	12,710,029	7,619	18,305,832
PARTS								
Parts, except engines and tires.....	..	2,184,341	..	2,206,678	..	34,090,863	..	37,309,609
Automobile unit assemblies.....	..	2,672,337	..	3,780,337	..	29,704,077	..	41,430,992
Automobile parts for replacement.....	..	677,690	..	612,811	..	7,985,554	..	6,744,527
Automobile accessories.....	..	461,435	..	241,049	..	5,954,972	..	6,343,828
Automobile service appliances (n. e. s.).....	..	23,252	..	16,579	..	155,211	..	172,453
Station and warehouse motor trucks.....	24	18,543	11	35,756	148	295,862	225	375,296
Trailers.....	44	12,222	16	203,489	828	161,426	825	592,906
Airplanes, seaplanes and other air craft.....	3	..	..	..	35	..	44	..
Parts of airplanes, except engines and tires.....	..	..	..	..	..	..	..	..
BICYCLES, ETC.								
Bicycles and tricycles.....	390	8,878	266	6,873	4,513	129,995	3,833	105,145
Motorcycles.....	1,870	405,242	1,879	437,821	19,371	4,197,253	16,309	3,668,702
Parts, except tires.....	..	108,650	..	100,769	..	1,466,699	..	1,052,120
INTERNAL COMBUSTION ENGINES								
Stationary and Portable.....	..	..	..	..	..	..	..	..
Diesel and Semi-Diesel.....	42	125,605	33	75,958	710	1,352,195	579	986,248
Other stationary and portable:	..	..	..	..	..	..	..	..
Not over 10 Hp.....	2,121	189,747	2,427	230,461	28,161	2,715,798	24,405	2,177,204
Over 10 Hp.....	146	80,693	216	92,218	2,451	2,128,984	2,353	1,427,053
Automobile engines for:	..	..	..	..	..	..	..	..
Motor trucks and buses.....	406	46,983	684	68,502	3,461	491,890	5,063	594,339
Passenger cars.....	6,936	888,558	4,860	563,516	109,908	11,227,884	87,684	9,559,469
Tractors.....	142	76,526	87	18,656	1,867	1,031,132	1,115	439,593
Aircraft.....	5	286	16	57,534	294	568,145	58	375,307
Accessories and parts (carburetors).....	..	264,945	..	198,438	..	3,599,622	..	2,828,991
IMPORTS								
Automobiles, including chassis (dutiable).....	100	124,813	72	113,954	648	1,111,531	527	939,044
Other vehicles and parts for them (dutiable).....	..	15,542	..	32,917	..	132,089	..	210,409
REIMPORTS								
Automobiles (free from duty).....	18	30,622	5	6,550	152	230,289	149	219,922

French Car Exports Show 14.5% Decrease

PARIS, Nov. 18 (by mail)—French passenger car exports for the first nine months of the present year show a drop of 14.05 per cent compared with the corresponding period of 1926. The total number of French cars exported from Jan. 1 to Sept. 30 was 35,972, having an estimated value of 1,162,881,000 francs, or an average per car of 32,323 francs. In addition, 3946 trucks were exported, with an estimated value of 133,211,000 francs, and 93,178 metric tons of spare parts valued at 7,401,000 francs. The total value of automotive exports is therefore 1,303,493,000 francs.

During the nine months of this year France sold the greatest number of cars in Spain, the total being 5428. Great Britain followed with 4572, Algeria with 4290; Belgium-Luxemburg with 3631, Switzerland with 3121, French Indo-China, 1375; Morocco, 1156; Germany, 1096, and Holland, 1089.

Imports Total 3662 Cars

Automobile imports into France during the first nine months of this year totaled 3662 passenger cars, of which 2308 were sent from Italy and 805 from the United States. The loss compared with last year is slightly more than 23 per cent, but the feature of the figures is the increased proportion of Italian cars, due to the greater activity of Fiat which now maintains its own selling organization in France, and the drop in the number of American cars con-

sequent to the slump in Ford business here. The value of American imports into France has increased and is nearly as high as Italian values, for the United States is now sending higher class cars, while Italy is selling the smaller and cheaper models.

Pratt & Whitney Plant Has Orders Year Ahead

HARTFORD, CONN., Nov. 26—Pratt & Whitney Aircraft Co. is now building 35 Wasp and Hornet engines a month, according to Assistant Secretary H. M. Horner. He said that the working force had been increased to 300 men and that two additional test buildings have been erected. The entire force will be busy for more than a year building engines on contracts now on file.

Hungary Studies Taxes

WASHINGTON, Nov. 26—A reduction by one-half in the luxury tax on automobiles of 20 hp. or less, as well as a 50 per cent reduction in tires, is now being considered by the government of Hungary, according to information furnished the U. S. Department of Commerce by its representative in that country. The cable states that the luxury tax on motor cars above 20 hp. will not be changed.

Completes Montevideo Plant

DETROIT, Nov. 26—The Ford Motor Co. has completed a modern assembly plant at Montevideo, Uruguay, at a capacity for 30 cars and trucks a day.

Conservation Urged to Meet Tin Famine

WASHINGTON, Nov. 30—A warning that the manufacturers of the world face a tin famine has been sent to the U. S. Department of Commerce by the Tin Statistical & Research Bureau of London, which points out that at the present time the United States controls 25 per cent of the world's output and supply.

Next to the canning industry the automobile industry is the second largest user of this commodity, the figures show. Since 1921, however, the automobile industry has shown the largest increase in the use of tin, with a percentage of 160 since that date. Since 1921 the world's available stocks have shown a steady shrinkage, the bureau points out, there being available as stock 12,911 tons in 1921, compared with 4120 tons on Oct. 31, this year.

"The warning for conservation of tin, is primarily directed against the United States which is today the greatest consumer of metallic tin and the greatest waster of it and, therefore, the first to feel the creeping shortage which is already at the door," the bureau warns.

Goodrich Sells Building

NEW YORK, Nov. 26—The B. F. Goodrich Rubber Co. has sold the 12-story Goodrich Building at the corner of Fifty-seventh St. and Broadway at a price understood to be close to \$1,500,000.

Men of the Industry and What They Are Doing

L. P. Fisher to Direct N.A.C.C. Show Banquet

Lawrence P. Fisher, president of Cadillac Motor Car Co., has been appointed chairman of the committee in charge of the annual banquet of the National Automobile Chamber of Commerce, to be held at the Hotel Commodore, Jan. 10, during the New York automobile show.

Others on the committee appointed by President Roy D. Chapin include Robert C. Graham, Paige-Detroit; George M. Williams, Marmon; E. L. Cord, Auburn; Alexander Legge, International Harvester; DuBois Young, Hupmobile, and Edward VerLinden, Peerless.

Walter Evans Joins Hudson

Walter Evans, vice-president and general manager of the John Doran Co., Hudson-Essex distributors, Spokane, Wash., has accepted a position as manager of distributing territories for the Hudson Motor Car Co.

Mr. Evans came to Spokane in 1916 from Rossland, B. C., where he had started in the automobile business and was Buick dealer. He was made sales manager in 1921, general manager in 1923 and vice-president in 1925. Following Mr. Doran's death this year he has had complete charge of the company's affairs. During 1926 he was president of the dealers division of the Washington Automotive Trade Association. Mr. Evans succeeds J. S. Draper, who becomes export manager for Hudson.

Lawrence Gets Medal

Charles Lawrence, designer of the Wright Whirlwind engines, was presented with the gold medal of the French Society of Automotive Engineers, at its monthly meeting in Paris, Nov. 16. In thanking the society, Mr. Lawrence emphasized the importance of cooperation in all engineering effort, pointing out that no one man can claim to have more knowledge when all the others united.

Overlock Succeeds Feltes

The Studebaker Corp. of America has appointed J. L. Overlock treasurer to succeed N. R. Feltes who has resigned. Mr. Overlock was formerly head of the firm of Overlock, Burke & Co., served on the staff of Price, Waterhouse & Co., was auditor and credit manager of the Hydrox Co. and comptroller and director of the Armour Grain Co.

Plympton Joins Lincoln

R. M. Plympton has been appointed to the Chicago sales staff of the Lincoln Electric Co. He was formerly assistant sales manager of the Babson Statistical Association.

Bauer and Kelly on 3000 Mile Trip

George F. Bauer, secretary of the foreign trade committee of the National Automobile Chamber of Commerce, and H. H. Kelly, United States automotive trade commissioner to Europe, have left Paris on a 3000 mile journey through central and eastern Europe, in favor of the American automotive industry. During this journey they will visit Belgrade, Sofia, Athens, Constantinople, Bucharest, Budapest, Prague, Berlin, with return to Paris. Before sailing for the United States on Dec. 17, Mr. Bauer will speak at the monthly dinner of the American Automotive Club of Paris, on Dec. 14.

Wibel Ford Purchasing Agent

A. M. Wibel, who has been associated with the engineering department of Ford Motor Co. for the past 16 years, has been appointed purchasing agent to succeed Fred H. Diehl, whose resignation was announced recently. Mr. Wibel is a graduate of the University of Indiana and of the Detroit College of Law. He was admitted to the Michigan bar while in Ford employ but continued his work with the automobile company.

Chamberlain Sees Sales High

R. E. Chamberlain, general sales manager of Packard Motor Car Co., who has just completed a business tour of the country, predicts good business through the winter and spring. With him on his trip were F. H. McKinney, advertising manager; J. A. Gilray, educational director, and J. W. Loranger, financial expert. Dealer meetings were conducted in all except the Chicago and New York zones.

Parker Named Commissioner

W. J. Parker has been appointed commissioner of the National Battery Manufacturers Association and of the Asbestos Brake Lining Association, succeeding O. B. Towne. Mr. Parker was formerly secretary of the Old Colony Club and is a graduate of Harvard Law School.

Blackwell Heads Office

Ray C. Blackwell has been appointed manager of the new Toronto office of MacManus, Inc. In addition to its offices in Detroit, MacManus, Inc., now has offices in New York, Cleveland, San Francisco, Los Angeles and Toronto.

Thomas Says Automobile Requisite in America

W. M. W. Thomas, director of sales, Morris Motors, Ltd., Crowley, England, who sailed for home recently, stated that he believes the motor industry in this country is largely responsible for our present prosperity and he is convinced that no one can live in America without a motor car, a radio set and a telephone.

The used car situation in America is more acute than in England, Mr. Thomas said, and he believes this is due to the fact that in England manufacturers do not exert so much pressure on the dealers to take cars as they do in this country and hence the load of used cars is not so great.

He expressed himself as astonished at the lack of individuality in American cars, which he says look and sound much alike. Light control of traffic and center lines on highways and the spirit of cooperation existing among manufacturers in the industry appealed to Mr. Thomas as interesting contributions of America to the industry.

Invents New Alloy

Dr. Max Wurmback, professor of metallurgy at the University of Munich, has arrived in this country with a new light alloy of his invention which he calls neonaleum. He claims it to be three times as strong as iron and as light as aluminum, asserting that its discovery is the most important step forward in the metallurgy of light alloys since the discovery of duralumin in 1907.

Biechler Back from Europe

E. G. Biechler, president and general manager of Frigidaire Corp., subsidiary of General Motors Corp., on his return from Europe this week said European business in 1927 will double the 1926 volume and sales in 1928 should double 1927 business. Time payment sales appear to be gaining favor in Europe, he said.

Otton Succeeds Hennecke

A. S. Otton, in addition to his present duties of trade promotion manager of the Moto Meter Co., Inc., has been appointed advertising manager to succeed C. F. Hennecke, resigned.

Forms Factory Branch

CLEVELAND, Nov. 26—The Paige-Ohio branch of the Paige-Detroit Motor Car Co., here will become a strictly factory branch under the reorganization plan of the Graham Brothers, it was announced today. Department heads who have been with Paige-Ohio for the past three years, will remain in charge.

Dodge Officials Show New Six to Dealers

Victory Models Will Fit Into Line Between Four and Senior Six

DETROIT, Nov. 30—Private showings to dealers are now being made by Dodge Brothers, Inc., of the Victory Six, a new six-cylinder model which will fit into the Dodge Brothers line between the present four and Senior Six. Public announcement of the line is expected to be made at the New York show.

In its introduction of the new line, Dodge Brothers executives are taking the models to dealers rather than bringing dealers into the factory. Dealer meetings are being staged in leading territories where the new cars are shown and factory policies for the coming year outlined. The plan also brings the heads of the manufacturing and sales organizations in direct contact with dealers and affords an opportunity of studying sectional conditions at first hand.

Included in the party are E. G. Wilmer, president; F. J. Haynes, chairman of the board; A. T. Waterfall, vice-president; A. K. Schoeff, assistant to the president; J. R. Lee, general sales manager; H. J. New, assistant sales manager; G. P. Anderson, director of sales engineering; F. C. Bestor, director of dealer operations; R. L. Biggers, director of sales promotion and development; Sedley Brown, director of advertising; A. H. Ferrandou, director of the motor coach division; E. N. Howe, director of the special equipment division; J. W. Hutchins, director of used car sales; J. H. Mack, director of national business sales; E. W. Shattuck, director of territory development, and H. M. Wiegand, director of service. George Harrison Phelps, Inc., is represented by G. H. Phelps, H. J. Koch and A. M. Corrigan.

James N. Gunn Dies After Long Illness

NEW YORK, Nov. 28—James Newton Gunn, president of the United States Tire Co. and vice-president and director of the United States Rubber Co. from 1915 to 1923 and one time general manager of the Studebaker Corp. of America, died at his home here Nov. 26 after an illness of 11 months. He was 59 years old.

Mr. Gunn was born in Springfield, Ohio. His first contribution to American industry was the perfection of "tab cards" and vertical files during his association with the Library Bureau of Boston. After contributing much to the growth of this company and working as a consultant for other large companies, he was called in 1911 by Stude-

baker to act as its general manager in coordinating the activities of its automobile division.

In 1915 the United States Rubber Co. placed him at the head of its subsidiary, the United States Tire Co. He retired from this association in 1923 because of failing health. Although his activities have been limited since then, he was able to act as one of the two receivers for the Hodgman Rubber Co. in 1924-1925.

Among Mr. Gunn's other activities was his assistance in establishing the Harvard Business School, of which he was one of the first lecturers. He also lectured for Columbia and New York University and the Massachusetts Institute of Technology. He was president of the Lincoln Highways Association and during the World War he represented the Rubber Association of America, Inc., on the War Industries Board.

Charles B. Manville Dies in Retirement

NEW YORK, Nov. 30—Charles B. Manville, founder of the Johns-Manville Corp. and its allied companies, died in Pleasantville, N. Y., Nov. 26, from a stroke of apoplexy. He was 92 years old. Mr. Manville conceived his idea for heat insulation when working in the garment industry in Milwaukee 70 years ago. His first successful project was the Manville Covering Co., the first of several concerns bearing his name.

The Manville Covering Co. reached such large proportions that it established plants in many cities and in 1900 moved its headquarters to New York, where it purchased the H. W. Johns Co., operating in much the same field and bearing a name of high standing. The combination was incorporated in 1901 as the H. W. Johns-Manville Co. The title was changed in 1920 to Johns-Manville, Inc., and in January of this year to the Johns-Manville Corp.

Charles B. Manville retired from active participation in the business in 1902, Thomas F. Manville, the elder of his two sons, succeeding him as president. He died two years ago leaving a fortune of \$23,000,000. Hiram E. Manville, the second son, was president from 1924 until June of this year, when he became chairman of the board after purchase of large holdings of common and preferred stock by J. P. Morgan & Co.

Announce New Spark Plug

NEW YORK, Nov. 29—Robert Bosch Magneto Co., Inc., has announced a new original-Bosch-pyro-action spark plug, for which is claimed a high degree of proficiency. The announcement was made at a recent conference of Robert Bosch distributors at Hotel Astor. A feature of the convention was a trip to the Robert Bosch plant in Long Island City.

Financial Notes

E. I. du Pont de Nemours & Co., Inc., has placed its common stock on a \$10 dividend basis and in addition has declared an extra dividend of \$4.25 a share. The quarterly dividend of \$2.50 was declared yesterday along with the extra dividend to be paid Dec. 15 to stockholders of record Dec. 1. The remaining \$3.75 of the extra dividend will be paid Jan. 4, 1928, to stockholders of record Dec. 1. By placing the common stock on a \$10 annual basis, directors have not only passed on the regular General Motors quarterly payment, amounting to \$1.87½ cents on du Pont shares, but added an additional 62½ cents out of du Pont's own earnings.

Reo Motor Car Co. reports net profit of \$4,145,792 for the year ended Aug. 31, equal to \$2.07 a share on common stock. This compares with \$4,257,919 or \$2.12 a share in the previous fiscal year. Directors voted to change the fiscal year to conform with the calendar year. The company declared an extra dividend of 2 per cent in cash and the regular quarterly, both payable Jan. 2 to stock of record Dec. 9.

Goodyear Tire & Rubber Co. of Canada, Ltd., reports net profit for the year ended Sept. 30, 1927, as \$2,171,390 after interest, depreciation and other charges. This compares with \$1,657,365 in the previous year. Profit and loss surplus was \$4,491,805 as against \$3,105,025 the year previous. Inventories were carried at \$3,483,171 as against \$4,065,141. No debts other than current bills were reported by the company.

Martin-Parry Corp. and subsidiaries report net income for the year ended Aug. 31, 1927, as \$5,234 after interest, taxes, etc., and after deduction of \$292,191 for inventory losses and unabsorbed overhead expenses. This is equivalent to four cents a share on 125,000 no par shares of stock and compares with \$4.14 a share for the previous year.

Midland Steel Products Co. reports earnings in the first nine months of 1927 as \$1,929,205, comparing with \$2,012,107 in the same period last year. Earnings for the third quarter were \$583,847 against \$547,419 a year ago.

W. B. Stephenson Elected to Head Delta Electric

MARION, IND., Nov. 29—W. B. Stephenson has been elected president of Delta Electric Co., succeeding J. W. Stephenson, who becomes chairman of the board. The new president was formerly treasurer and general manager and as such was the active head of the business. J. W. Stephenson is president of Indiana Truck Corp. and also president of the National Truck Association.

Following the recent purchase by Delta of the Accessories Mfg. Co., Chicago, an aggressive plan of expansion is under way which aims to develop much car equipment business from manufacturers.

Ford Showing to Help December Sales

(Continued from page 844)

year and reports from sections that they are proving burdensome are discounted for this reason. There are indications that many of the factories are giving their dealers an opportunity to reduce stocks before stepping up production schedules.

BOSTON

Motor car sales for November took a curve downward here beginning about the middle of the month. There had been a steady flow of sales beginning just after the month opened and it seemed as if it were going to continue, but adverse factors developed. Distributors who have received new models backed by good advertising campaigns, are selling cars. As a rule stocks on hand with the dealers now are low, both new and used cars. There would have been more new car sales, but the dealers are not taking chances on the used cars offered them. There is much difference of opinion among the dealers regarding what the effect will be when Ford announces his new car.

NEW YORK

Sales of automobiles during November showed a seasonal decline in volume, but compared well with last year at this time. Actual sales during the first two weeks were 3027 cars, according to Sherlock & Arnold, which compares with 2922 during the corresponding period last year. Total October sales were 8356 cars. Stocks on hand of both new and used cars are rather heavy and some dealers are now carrying new cars in warehouse. This has resulted in price cutting and has made it more difficult to dispose of used cars without taking a loss. The feeling is becoming general that the appearance of the new Ford will release a large volume of buying in the less-than-\$1,000 class which has been holding back for this event.

ATLANTA

Motor car sales in the southeastern district the past month were again in excess of the corresponding month in 1926, but still were not as large as most of the dealers and distributors had expected. Conditions are a little spotty, with sales unusually brisk in districts where the 1927 crops were successful, due to the high prices prevailing this year, but less brisk elsewhere. Increasing sales are keeping new car stocks at about a normal level, but used car stocks are still rather larger and nearly all new sales involve trade-ins.

CHICAGO

Renewed activity by dealers in the Chicago territory is developing business. Retail trade is even with last month and 10 per cent better than a year ago. Indications are that the year will end with business in a healthy condition. Automobiles in the lower price bracket continue to lead. New car stocks are normal. Used cars have shown little, if any, price recessions. Stocks are below normal and some dealers are advertising for better grade cars. General optimism is noted and the outlook for December appears good.

KANSAS CITY

New car sales in Kansas City in November have been above normal, virtually all dealers agree, while the used car situation

is described as the best in more than 10 years. The improved used car situation generally is credited to the dealer-owned wrecking company. Most dealers have less than one-half the used cars on hand they had a year ago. Leading dealers here all agree that the quicker the new Ford car is placed on the market the better it will be for the whole automobile situation. The apprehension that was apparent among dealers a few months ago over the new Ford is all gone. A very limited stock of new cars is in the hands of dealers, due largely to sales being better than anticipated.

CLEVELAND

November automobile sales in Cleveland were light; in fact the lightest on record for that month in recent years, due to lack of production in low price cars and to generally poor business and industrial conditions in this section. Just before Thanksgiving there was a slight spurt in used car sales. The prospects for December are problematical. Expectation is that business may remain light until the January show begins. Ford production is not expected to become great enough to warrant Ford sales becoming any factor here during the next month.

DETROIT

Automobile sales in Detroit and throughout Michigan are reported as unusually slow. This is largely attributed to continued delay bringing out new Ford, but now that it is definitely known that the car will be introduced soon, dealers in all lines believe that it will tend to clarify existing conditions and will work for the benefit of all. Used car stocks are spotty. A survey of a number of Detroit dealers reveal used car stocks at approximately the same level as last June with an inventory value of about \$500 a car. In upstate cities used car stocks are reported in many instances as uncomfortably large.

ST. LOUIS

While automobile sales were somewhat better in November than during October of this year, they were still behind those of November of 1926. Stocks of new cars in dealers' hands are lower than usual by some 10 per cent. Used cars have been very good for this time of the year and stocks are from 10 to 15 per cent below those on hand at the same time last year. It is the opinion of leading dealers in all price classes of automobiles that the appearance of the new Ford on the market will have a beneficial effect on sales of all automobiles. There have been a great many prospects for all kinds of cars who have been waiting for the new Ford to come out.

MILWAUKEE

Prospects for December passenger car business are considered more encouraging than for several months past, with the atmosphere clarified by the Ford announcement and a more optimistic sentiment relative to general business. December always has been the poorest month of the year for producing business, for various reasons, but dealers confidently expect to fare better than a year ago under the stimulation of interest now going on. Undoubtedly much business has been held in

suspense awaiting the new Ford, and now that the public has had an opportunity to witness the result of a great mass of rumors, dealers feel that the demand will be materially stimulated, not only in low priced makes, but in all lines.

MINNEAPOLIS

The used car situation is the serious feature of the automobile business in this district. Dealers are filled up, there is not as good an outlet as usual for used cars and new car sales hinge on trades. Many dealers have reached the maximum figure they have set in total valuation they will carry of used stocks. In November, new car sales averaged from 2 per cent up better than in 1926. New car stocks are not increasing. As a rule dealers do not expect the Ford announcement to upset business. They believe the appearance of the Ford car will stimulate the closing of other sales generally.

CINCINNATI

New car registrations to Nov. 23 in Hamilton County were 783, compared with 830 at the same period a year ago. Used car registrations, on the other hand, were 2625 as compared with 2251 on the same day last year. The increase in sales of old cars as against the decrease in new car sales is held by dealers as indicative of the effect of Ford propaganda. Conditions in November have been disappointing insofar as new car sales are concerned and the delay in bringing out the new Ford is held primarily responsible.

DENVER

Trade is very slack in this territory, especially in low priced cars. Trucks also are very quiet. Farming districts are picking up a little due to beet payments. The best territory is Sanlis Valley, then Greeley. Fort Collins district dealers sacrificing stocks of used cars to unload. They think that the appearance of the new Ford will be met with enormous demand for them and will release many buyers for other small cars.

DALLAS

Business in most automotive lines in Texas and parts of Oklahoma, Louisiana, Arizona and New Mexico failed to come up to dealer expectations during November, despite the fact that money was plentiful and the general conditions improved over the same period last year. New car sales were 10 per cent below those of October and far below November a year ago. Dealers in most instances have pretty large stocks. Used car sales are some 7 per cent below October and far less than November last year. Stocks continue heavy and prices low. Truck sales are slow—10 per cent less than for October and 15 or 20 per cent below November year ago. Dealers are of opinion the coming of new Ford model will improve business in cars of that price level.

LOS ANGELES

Southern California November sales are disappointing, running considerably under November, last year, and somewhat behind last month. New car stocks in dealers' hands appreciably higher than same period year ago. Distributors note mark-

(Continued on page 852)



B. W. deGuichard

New president and vice-president of AC Spark Plug Co., Mr. de Guichard succeeding the late Albert Champion. Mr. Curtice was formerly assistant general manager



H. H. Curtice

B. W. deGuichard New AC President

FLINT, Nov. 28—Congratulations are pouring in upon B. W. deGuichard, who has been named president of AC Spark Plug Co., succeeding Albert Champion, who died last month in Paris. Mr. deGuichard for many years was vice-president and general manager and his elevation to the presidency, which was announced by Alfred P. Sloan, Jr., president of General Motors Corp., did not come as a surprise. Mr. Sloan also announced that H. H. Curtice, assistant general manager, had been promoted to vice-president and assistant general manager.

"It is my intention that we carry on the work where Albert Champion left off," Mr. deGuichard said as to future policies. "Being so intimately associated with Mr. Champion for so many years it is natural that we should know his aims and ideals and the organization shall carry on under the inspiration of our late leader.

"In taking over my new duties I can see that some of the work I formerly did shall of necessity have to be passed along to someone else. In a few days I will be in a position to announce several more new promotions and they will all be made within the organization, which is in keeping with a General Motors policy to reward meritorious service with advancement.

Gray Heads Equipment Sales

"At the present time it gives me a great deal of pleasure to announce that John Gray becomes director of equipment sales. Mr. Gray has been associated with the company for a long time as a sales engineer working out of the Detroit office. Mr. Gray will continue to make his headquarters in Detroit. W. E. Ross has been named comptroller, Mr. deGuichard declared.

The new AC president was born in Denver, Col., Dec. 28, 1885. During his boyhood his parents moved to England

and later to France, in which countries he received his early education. When 14 years of age, he started bicycle racing in France as an amateur. The next year he won the Middle Distance Amateur Championship of France. He later raced as a professional in France and the United States.

For four years Mr. deGuichard interested himself in automobiles. He returned to this country in 1908 and started work with Albert Champion, in Boston. He started selling goods throughout New England—selling spark plugs and magnetos in a community where automobiles were about as numerous as horses and buggies are today.

Came to Flint in 1908

Quitting the road he worked in the factory and testing departments. In September, 1908, Mr. deGuichard came to Flint with Albert Champion, at which time the AC business was started. During the phenomenal development over a period of 19 years, Mr. deGuichard was advanced to vice-president and assistant general manager and in 1922 was elevated to the position of vice-president and general manager.

The new president, whose acquaintance throughout the industry is very extensive, is a son-in-law of Charles W. Nash, president of Nash Motor Co. He is a prominent member of the Flint Country Club and the Detroit Athletic Club.

Mr. Curtice, the new vice-president and assistant general manager, is a native of Michigan. He was born in Eaton Rapids, Aug. 15, 1893, and was graduated from the high school there, later entering Ferris Institute where he specialized in commercial studies.

On Feb. 1, 1914, he came to Flint, becoming associated with the AC Spark Plug Co. in the accounting department. The following year he was elevated to the position of comptroller. On May 24, 1923, he was made assistant general manager.

Steel Outlook Bright as December Opens

Automobile Consumers Show Broader Interest—Sheet Mills Seek Higher Prices

NEW YORK, Dec. 1—While the opening of the year's final month finds the steel market heartened rather by the better outlook than by any spectacular quickening of the flow of orders, it is nevertheless a fact that the long expected improvement has begun to set in. Inquiries from automotive consumers show broader interest and, in some descriptions of steel, mills have been able to better their rate of operations slightly.

No one looks for a sudden buying movement to develop over night, but for a gradual, orderly upturn in the demand. The general expectation is that automotive consumers will figure much more prominently in the steel market this month than is ordinarily the case in December and, if this proves to be the case, it will give to the steel market as a whole the momentum that it needs to quicken consumer interest.

Sheet mills continue to live in hopes that conditions will so shape themselves as to permit of early upward revision of prices. So far the stiffening in prices for steel bars and other heavy steel products has not helped to pull other steel products out of, what producers claim to be, their "red ink" position.

It is said that some of the non-integrated sheet mills have come to the conclusion that lower sheet bar prices would be little help to them, as this would tend to demoralize the market, instead of strengthening it. Strip mills are said to be well satisfied with the \$33 price for their semi-finished material, as their requirements call for a rather high quality slab and price concessions would merely tend to increase their manufacturing and marketing problems. The market for automotive alloy steels is a shade steadier.

Pig Iron—Middle West automotive foundries are having the pick of numerous attractive offers, Cleveland furnaces being especially eager for orders at extremely low prices. Melters refrain from committing themselves beyond their nearby requirements.

Aluminum—Automotive demand has improved to some extent, small lot sales in the Detroit market being more numerous.

Copper—Greater solidarity among producers is generally believed to result in further advances in the market. For the present the market is holding its own.

Tin—The market is firm, and the bulls again seem to have control.

Lead—Storage battery manufacturers are expected to come into the market this week, as they held aloof while other consumers were buying and the market grew firmer. The leading interest has advanced prices \$1 a ton.

Zinc—Quiet, but firm.

New Ford Showing to Help Car Sales

(Continued from page 850)

edly adverse effect on market generally. Even owners in the high priced class express the opinion that the Ford arrival, when it does come, may bring price revisions all along the line. Used car stocks are slightly higher than last month. Truck market showing slight improvement, although still basically weak. Used truck sales increasing.

SEATTLE

New car sales in Seattle continue to run 20 per cent under a year ago. Only eight makes of cars showed increases over previous months and 27 showed decreases, with particular loss in cars selling under \$1,000. Dealers frankly admit the Ford situation is disturbing to cars even priced as high as \$1,500. They look for an active market as soon as the public has had opportunity to appraise Ford's new car. The used car market is in good shape, as are collections.

NEW ORLEANS

A survey of automotive conditions in New Orleans for November shows that the market is depressed. Sales of new and used cars are considerably below the same period of last year. The chief contributing factor is the delay of the new Ford automobile, and the adverse condition of business which still obtains as a result of the flood. The new Ford automobile is now in the city, but has not been exhibited. Contrary to general belief, few actual orders have been taken here for the new Ford.

SAN FRANCISCO

Sales for the first three weeks of November in this territory, appear to be somewhat lower than in the same month in 1926. Stocks of new cars are normal, with the exception of Ford, and are apparently about 10 or 12 per cent higher than in November, 1926. Stocks of used cars are heavy, probably 25 per cent higher than they were in November last year. The great majority of these used cars, however, are in the hands of used-car vendors. Used cars are moving very slowly, except rebuilts.

General opinion among the dealers is that the delivery of the new Ford will improve general sales conditions.

Coming Feature Issues of Chilton Class Journal Publications

Feb. 18—Statistical Issue—
Automotive Industries

Jan. 1—National Shows Number—Automobile Trade Journal.

Jan. 5—National Shows Issue—Motor Age.

Rubber Trading Advances to 43,700 Tons in Month

NEW YORK, Nov. 28—Trading on the Rubber Exchange during November has, to date, exceeded all previous corresponding monthly periods, reaching approximately 43,700 tons, as compared with about 15,000 tons during the entire month of November, 1926, according to Henderson, Helm & Co., Inc. Prices have shown an orderly advance, based largely on factory buying plus a considerable interest on the part of outside speculators. As a result of this speculation prices may soften somewhat but the tendency seems to be toward a higher level.

Exports from the restricted areas in Malay during October amounted to 15,175 tons, compared with 17,390 tons during September. It is officially estimated that the carry over of unused export rights at the end of October amounts to the equivalent of 8814 tons.

Paige Sales Gain 24%

DETROIT, Nov. 26—Sale of Paige cars during the first half of November shows an increase of 24 per cent over October sales during the corresponding period. October Paige sales marked a 17 per cent increase over those of September. November, keeping up the increase to an even greater degree, gives every indication that this rise in volume of sales will continue.

Research Body Aids Secondary Highways

WASHINGTON, Dec. 1—Several hundred highway research experts convened here today for the seventh annual meeting of the highway research board of the National Research Council. The sessions will continue through Friday. Charles M. Upham, director of the highway research board, is in general charge of the sessions. Presiding over the sessions are T. R. Agg, of Iowa State College; W. C. Markham, of the American Association of State Highway Officials; Dean G. M. Braune, University of North Carolina, and H. G. Shirley, chairman of the Virginia State Highway Commission.

The meeting is expected to give immediate impetus to the construction of secondary highways throughout the United States. The report on low cost road conditions will be delivered by C. N. Conner, chairman of the low cost improvement road investigation, which was conducted by the research board.

Moon Reduces Overhead

NEW YORK, Nov. 26—Stewart MacDonald, president of Moon Motor Car Co., has declared himself highly optimistic on the outlook for 1928. His company's economies in operating have resulted in a 37 per cent decrease in overhead and general expenses, he said.

Battery Convention Feb. 15

NEW YORK, Nov. 26—The National Battery Manufacturers Association will hold its annual convention in Chicago Feb. 15-16. Further details as to the place in which the convention is to be held and the program of meetings will be announced later.

Unishear in New Plant

NEW YORK, Nov. 30—The Unishear Co. has moved its plant and general offices to 270 Lafayette St., where it will have increased facilities for production.

Calendar of Coming Events

SHOWS

All Western Road Show, Los Angeles, March 7-11
American Road Builders Association, Public Auditorium, Cleveland, Jan. 9-13
Automotive Equipment Association, Coliseum, Chicago, Oct. 22-27
*Boston, Mechanics Bldg., March 10-17
*Chicago, National Automobile Chamber of Commerce, Coliseum, Jan. 28-Feb. 4
International Aircraft Show, Berlin, March 23-April 11
*New York, National Automobile Chamber of Commerce, Grand Central Palace, Jan. 7-14
Rio de Janeiro, May 3-13
Salon, Automobile Salon, Inc., Hotel Drake, Chicago, Jan. 28-Feb. 4

*Will have special shop equipment exhibit.

Salon, Automobile Salon, Inc., Hotel Biltmore, Los Angeles, Feb. 11-18
Salon, Automobile Salon, Inc., Palace Hotel, San Francisco, Feb. 25-March 3
United States Good Roads Show, Des Moines, May 28-June 1

CONVENTIONS

American Road Builders' Assn., Hotel Hollenden, Cleveland, Jan. 9-13
American Road Builders' Association, Banquet, Hollenden Hotel, Cleveland, Jan. 11
American Society of Mechanical Engineers, Annual Meeting, New York City, Dec. 5-8
Automotive Equipment Association, Coliseum, Chicago, Oct. 22-27
Automotive Equipment Association, Grand Hotel, Mackinac Island, June 10-16

National Foreign Trade Council, Houston, Texas, April 25-27
Overseas Automotive Club, Inc., Monthly Luncheon, Hotel Astor, New York, Dec. 8
United States Good Roads Association and Bankhead National Highway Association, Des Moines, May 28-June 1

N. A. D. A.

Chicago, Jan. 31-Feb. 2—Annual, Palmer House.
Chicago, Feb. 1—Banquet, Palmer House.
New York, Jan. 9-10—Eastern District, Hotel Commodore.

S. A. E.

Detroit, Jan. 24-27—Annual Meeting.
European trip—Nov. 2-Dec. 12.
New York, Jan. 12—Annual Dinner.